REPORT RESUMES

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FIELD STUDY IN INDUSTRY FOR THE PREPARATION OF INDUSTRIAL ARTS TEACHERS. FINAL REPORT, VOLUME 2.

STATE UNIV. OF N.Y., OSWEGO, COLL. AT OSWEGO

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DESCRIPTORS- *INDUSTRIAL ARTS, *TEACHER EDUCATION, *STUDY GUIDES, RESOURCE UNITS, ANNOTATED BIBLIOGRAPHIES, *INDUSTRY, INDUSTRIAL STRUCTURE, TESTS, *FUNDAMENTAL CONCEPTS, FIELD EXPERIENCE PROGRAMS, RESOURCE GUIDES, PROGRAM GUIDES,

THIS DOCUMENT CONTAINS INSTRUCTIONAL MATERIALS DEVELOPED IN A PILOT PROJECT TO PROVIDE COORDINATED EDUCATIONAL AND INDUSTRIAL FIELD EXPERIENCES IN A 9-WEEK COURSE FOR PRESERVICE INDUSTRIAL ARTS TEACHER EDUCATION. THE MATERIALS PRESENT FUNDAMENTAL CONCEPTS RELATIVE TO INDUSTRIAL STRUCTURE AND ORGANIZATION. THE CONTENTS, PRESENTED AS APPENDIXES D THROUGH K. INCLUDE--(1) "DIRECTED FIELD STUDY STUDENT RESOURCES FILE" WHICH INCLUDES A BIBLIOGRAPHY OF PAMPHLETS, FILMS, TEXTBOOKS, AND PERIODICALS, (2) "STUDENT WORKBOOK" WHICH PROVIDES REFERENCES AND ASSIGNMENTS FOR THE ENTIRE COURSE AND AN INTEGRAL FORMAT FOR REPORTS, (3) "A GUIDE FOR INDUSTRIAL PERSONNEL" WHICH OUTLINES THE PROGRAM AND GIVES THE RESPONSIBILITIES OF ALL PERSONS INVOLVED, (4) "TABLUATION OF INDUSTRIAL CONCEPTS" WHICH PROVIDES A LIST OF 326 INDUSTRIAL CONCEPTS IDENTIFIED BY THE FOUR CLASSES IN 1,722 STUDENT RESPONSES, (5) "UNDERSTANDING INDUSTRY" WHICH IS A 71-ITEM MULTIPLE CHOICE TEST COVERING INDUSTRIAL CONCEPTS WITH ITS ANSWER KEY, AND (6) "EXAMPLES OF CURRICULUM RESOURCE UNITS" WHICH GIVES EXAMPLES OF RESOURCE MATERIALS PREPARED BY THE STUDENTS. THE PROJECT REPORT, PROGRAM DESCRIPTION, AND APPENDIXES A THROUGH C ARE GIVEN IN VT 005 276. (EM)

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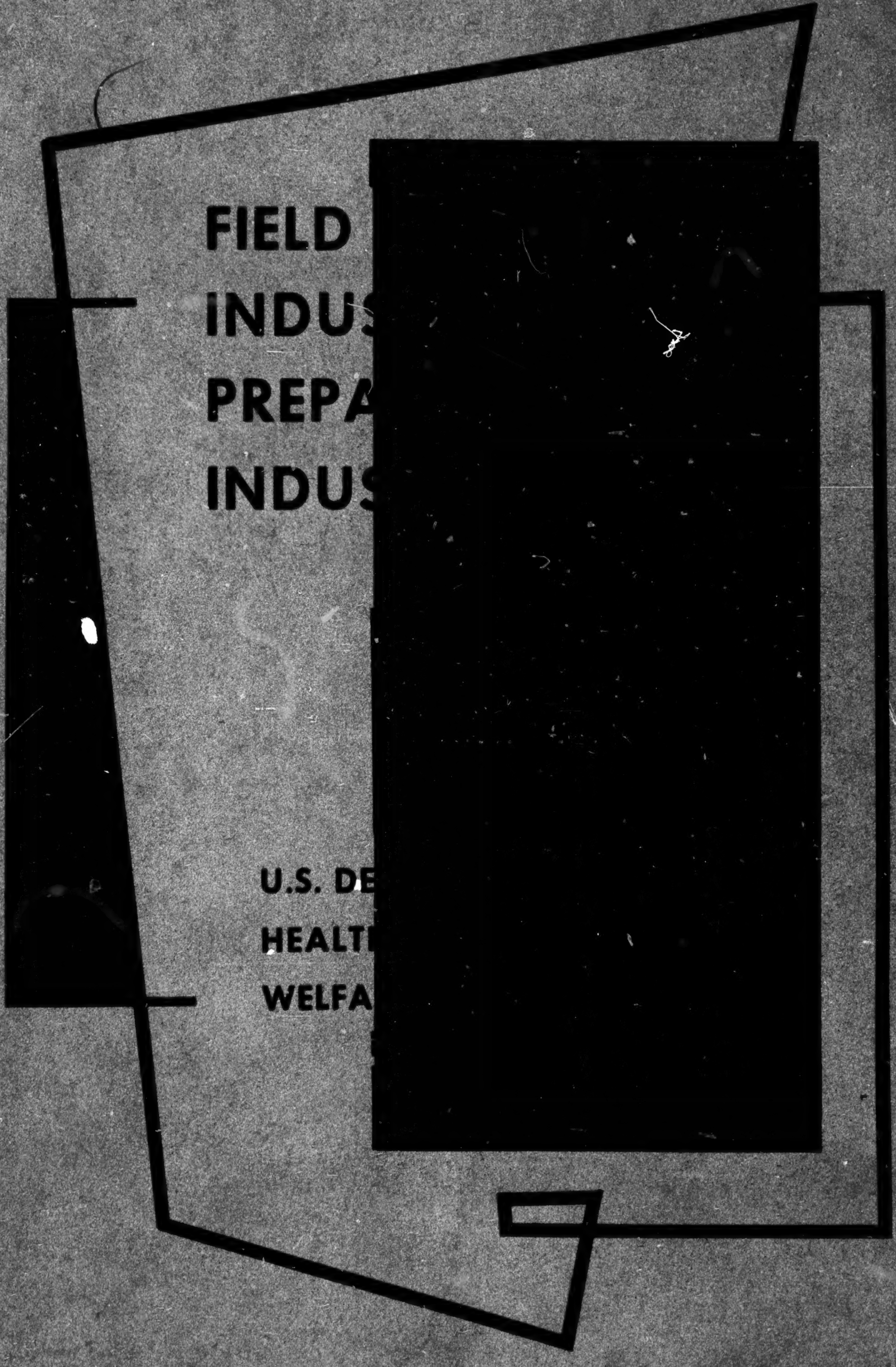

FIELD
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FINAL REPORT
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BUREAU OF RESEARCH
AUGUST 1967

APPENDIX D

FIELD STUDY RESOURCES

Resource File

Annotated Bibliography of Films

Annotated Bibliography

Annotated Periodical List

DIRECTED FIELD STUDY STUDENT RESOURCES FILE

Allis Chalmers Manufacturing Company, Milwaukee, Wisconsin

Patent Background for Engineers

American Can Company, Milwaukee 1, Wisconsin

Fleming, Harold M., The American Achievement, 1961

American Federation of Labor, Congress of Industrial Organizations,
815 Sixteenth St., N.W., Washington, D. C., 20006

Collective Bargaining - Democracy on the Job, Pub. #136, 1965

This Is The AFL-CIO, Pub. #20, 1964

Why Unions, Pub. #41, 1962

E. I. DuPont de Nemours & Company, Wilmington, Delaware

This Is DuPont - The Organization and the Individual, #26, 1964

This Is DuPont - The Story of Prices, 1960

This Is DuPont - Automation and Employment

This Is DuPont - The Profit Motive, #24, 1962

This Is DuPont - The Story of Patents & Progress, 1962

This Is DuPont - The Industry of Discovery

Ford Motor Company, Information Services, The American Road, Dearborn, Michigan

The Evolution of Mass Production 1966 - Business Trends & Progress

General Electric Company, Educational Relations, Schenectady, N. Y., 12305

You And The Computer

General Motors, Educational Relations Section, Detroit 2, Michigan

Kettering, Charles F. and Orth, Allen, American Battle For Abundance - A Story of Mass Production, 1955

Can I Get The Job?

National Association of Manufacturers, Education Division, 2 East 48th Street,
New York, New York, 10017

Teachers Guide - Industry and the American Economy Series, 1960

The Growth of American Industry, #901

A Comparison of Three Economic Systems, #902

Productivity - A Measure of Economic Progress, Economic Series, #82

Capital and Economic Growth, #903

Patents and Your Tomorrow, 1961

Productivity and Production in Industry, #904

Industry's Profits, #905

Industrial Research and Development, #906

The Role of Competition, #907

Wages and Prices in an Industrial Economy, #908

Industry - Organization and Employees, #909

The Role of Marketing, #910

Our Native Land, #911

Automation - A Background Memorandum

Economic Implications of Union Power, 1962

Automation - A Prime Source of More and Better Jobs, Economic Series, #81, 1960

Patents - Progress and Prosperity, Economic Series, #62, 1953

Labor Management Developments

Do's and Don'ts for Mature Job Seekers

Standard Oil Co. (New Jersey), Room 1626, 30 Rockefeller Plaza, New York, New York, 1002[illegible]

Chase, Stuart, How To Read An Annual Report

Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Brief History of the American Labor Movement, U.S. Dept. Commerce Bulletin No. 1000,
19[illegible] ($.40)

Do You Know Your Economic ABC's, U.S. Dept. Commerce Bulletin, 1965 ($.20)

Patents Spur To American Progress, U. S. Dept. Commerce Bulletin, 1965 ($.25)

Profits & The American Economy, U.S. Dept. Commerce Bulletin, 1965 ($.25)

Science and Technology For Mankind's Progress, U.S. Dept. Commerce Bulletin, 1966 ($.25)

U.S. Economic Growth, U.S. Dept. Commerce Bulletin, 1966 ($.25)

New York Stock Exchange

Understanding Financial Statements

Industrial Conference Board, 845 Third Avenue, New York, New York, 10022

Road Maps of Industry

Incidental Papers:

Face, Wesley L. and Swanson, Robert, Philosophical Implications for Industrial Arts. Topic I: A Conceptual Approach to the Study of American Industry - 53rd Annual Convention of the American Vocational Association, Industrial Arts Division - Wednesday, December 9, 1964. (not available for distribution)

ANNOTATED FILM BIBLIOGRAPHY

HISTORY OF AMERICAN INDUSTRY AND BUSINESS

Title: Beginnings and Growth of Industrial America 11 minutes B & W

Grade: 7-12 (FS) **Source:** (7)

Discusses the economic and social change in the period between the Revolutionary and Civil Wars. Development of American industry from a period of home crafts to an industrialized factory system.

Title: How the Market Evolved 30 minutes B & W

Grade: High School and College **Source:** (7)

This film gives a very good understanding of the history of our economic system. The early factory system as it was in New England is explained.

The "how" and "why" of corporation development is carefully explained, giving a real example of its need and effects.

INDUSTRIAL ECONOMICS

Title: Capitalism 12 minutes B & W

Grade: High School and College **Source:** (7)

This film explains the role of profit in our economic society. The function of the contrast is displayed in a graphic illustration.

Also discussed are the roles of competition, profit, and right to enter into contract, as the major functions of our free private enterprise system. These topics are discussed by a group of high school students on a radio program.

Title: Competition and Big Business 30 minutes B & W

Grade: College **Source:** (4 or 7)

Stress is placed on free choice in our society. The reasons for "big business" are explained. A good illustration is given for a monopoly in the oil and asphalt industry. Several good specific illustrations on quality of parts used with respect to new techniques, processes, materials, etc., are given.

The function of research, product design and development of new products is explained. Produced about 1950.

Title: Economic Growth 30 minutes B & W

Grade: High School and College **Source:** (7)

Illustrates the causes of our economic growth, how it is measured, and the factors which impede growth by hampering capital accumulation and investment.

Very appropriate for introduction to industrial economics.

Title: Freedom of Choice 10 minutes Color

Grade: High School Source: (10)

Emphasis on the free enterprise system and a free society is described in this film on Junior Achievement.

The role of a corporation is explained through the function of shareholders. Capital, dividends, profit are described. The duties and responsibilities of the board of directors, president, vice presidents and other top management personnel are explained. The need for specific knowledge and skills is described as vital to all who hope to participate in an industrial world.

Limited value for our Field Study use; more appropriate for a high school group in industrial arts, business, or civics.

Title: In Our Hands (1612) Part II - 15 min., Part III - 10 min.,
Part IV - 10 min. B & W

Grade: Junior High - College Source: (2)

Part II - This film in several parts explains our economic freedoms and how our economy works.

Part III - Socialism and free enterprise are dramatized candidly to explain what a loss of our freedom would mean to the individual as well as the country.

Part IV - Explains how easily we could lose our economic freedom and our free way of life through the value of the secret vote.

These parts could be used separately or together. Somewhat out-dated but principles are accurate and meaningful.

(Limited value to Field Study.)

Title: It's Everybody's Business 20 minutes Color (animated)

Grade: Junior High - College Source: (15)

The basic freedom and rights of Americans are explained and interpreted to industry and business. E.g. rights to assemble, seek employment, bargain for goods in a free market, own property, go into business, etc. Also explains how capital was obtained in America's early days.

The roles of advertising, wages, taxes, investors' dividends, flow back concept, competition, war, and government controls are all illustrated. Tells how insurance - savings - bonds and stocks all help to produce capital.

NOTE: This is a better film than "The Story of Creative Capital."

Title: The Law of Supply and Demand 11 minutes B & W

Grade: 10-12, College Source: (3)

Demand starts with people and the relationship between supply and demand is affected by many factors including competition. The plan of this law in a free society affects the selling price of most all consumer goods.

Generally a good film for use with high school or Field Study students in either industrial economics or finance.

Title: **The Nation's Resources** 30 minutes B & W

Grade: High School and College **Source**: (7)

Discusses the quantity and quality of the nation's land, labor, capital and managerial talent on which business is dependent in providing goods and services. (Especially appropriate for initial study of industrial economics.)

Title: **The Role of the Market** 30 minutes B & W

Grade: High School and College **Source**: (7)

Describes what the market is; what it does; and how it operates to determine prices and allocate resources. The forces of consumer demands and industrial supply are examined in detail.

(Very well suited for Field Study use during first week study of industrial economics.)

Title: **The Story of Creative Capital** 14 minutes Color (Animated)

Grade: Junior High - College **Source**: (15)

Good explanation of the need for capital in today's modern industry. Explains how savings of small individuals is used to produce capital for large industries through capital stock. The need for capital for research to stay competitive and to expand into new product fields is developed.

Good comparative study of what a dollar would purchase today as compared to the days of our early industrial growth. Risk for profit explained.

("It's Everybody's Business" is more detailed and better than this, however.)

Title: **Trouble in Paradise** 12 minutes Color

Grade: 9-12 **Source**: (8)

An animated cartoon which presents a story on inflation--its causes, consequences, and cures. The story is built around a mythical country which runs into financial troubles and manages to solve them by getting the people to work together on their problem.

Too elementary for Field Study use.

Title: **Two Views on Socialism** 15 minutes B & W

Grade: 10-12, College **Source**: (3)

A group of high school students present a panel on socialism. They discuss why we should study socialism and try to define it. A socialist presents the arguments for socialism while a capitalist presents the arguments for a free enterprise system.

Although the dress of the students in this film tend to date it, it has considerable value for Field Study use.

INDUSTRIAL ORGANIZATION

Title: Internal Organization 10 minutes B & W

Grade: High School and College **Source:** (7)

A very brief film that illustrates the fundamental purposes of business organizations and basic organizational principles.

Appropriate for Field Study use or high school industrial arts students.

Title: What Is a Corporation 11 minutes B & W

Grade: 7-12, College **Source:** (7)

The three principal forms of business ownership: single proprietorship, partnership, and the corporation are described. Both advantages and disadvantages of each type are discussed with emphasis on the corporation.

While brief, this film does a good job of reviewing these three forms of ownership.

INDUSTRIAL RELATIONS I

Title: Job Evaluation - Industrial (707) 10 minutes B & W

Grade: 10-12, College **Source:** (2)

Role of job analysis. Systems of job rating. Discussion of incentives. Role of time study engineers in job evaluation.

This film is rather technical but some very good questions are raised and discussed in good detail.

ENGINEERING

Title: Product Development 22 minutes B & W

Grade: High School, College **Source:** (7)

This film considers the function of research in improving materials, processes and products, qualifications of acceptable products, and various other aspects of product engineering.

Generally this would be a good film for high school and college groups as well as the Field Study students.

Title: Technological Development 30 minutes B & W

Grade: High School and College **Source:** (7)

Examines the role of technology in American business and shows how competition compels constant research for better products, processes and materials.

(This film is especially appropriate for the engineering phase of the Field Study.)

PRODUCTION

Title: Automation Part I, II, III 84 minutes total B & W

Grade: 9-12, College **Source:** (12)

Explores the many problems connected with the revolutionary development of automation, and shows automation at work in many industries from aviation to baking. While rather general, this film does illustrate the basic problem caused by automation.

Very appropriate for Field Study use.

Title: The Basic Elements of Production 15 minutes B & W

Grade: High School and College **Source:** (4 or 7)

Explains the four basic elements of production, natural resources, labor, capital and management.

Illustrates how capital is obtained through personal savings, insurance companies, etc.

Good explanation of the role of the stockholder, bondholder, and the board of directors.

Title: Man of the Assembly Line 22 minutes B & W

Grade: 11-12, College **Source:** (7)

This film deals with the tensions that are often created in our modern industrial plants. A particular worker is very tense and finally "blows his top" because a foreman unwittingly forgets his promise to this worker over a very personal matter.

This should be used with only upper class high school students or college students with both pre- and post-discussions.

Title: Motion Study Principles 28 minutes B & W

Grade: High School, Junior High School, College **Source:** (7)

Illustrates the basic motion study principles as applied to a very simple sub-assembly of putting washers on bolts and knobs and washer on brackets used in the manufacturing of washing machines. Through implementing these principles employee fatigue was reduced and production increased.

Good application for Field Study or School use.

Title: Production Control Parts I and II 20 minutes B & W

Grade: 9-12, College **Source:** (7 or 12)

Explanation of the systematic procedure by which management regulates production output to meet the fluctuating product requirements of consumer demands. Routing, scheduling, dispatching and follow-up are discussed. The use of a master schedule is demonstrated.

Very valuable for study of production.

Title: Quality Control 10 minutes B & W

Grade: 9-12, College **Source**: (7)

Discussion of how industry controls the quality of its products by keeping check of the variable factors in manufacturing; especially men, machines, materials, and other manufacturing conditions.

A good film to use in the production phase of the Field Study

LABOR

Title: Arbitration in Action (1501) 60 minutes B & W

Grade: High School, College **Source**: (2)

Produced in cooperation with Harvard University, American Arbitration Association, and WGBH - TV (Education TV) Boston.

Actual case presented before American Arbitration Assn. regarding a discharged worker. Very good facts discussed in a candid setting. The arbitrator states the claim as made by the union. Opening statements are made by both union and management, witnesses are heard, questioning and cross-examination, final statements and the arbitrator explains how he must make the decision and on what facts.

There is a natural point of taking a break at midway through this film as there is a short recess in the hearing. This would allow for student discussion.

Although this is a long film it is very well done, has some humorous parts that makes it move along at a good pace.

Title: The Grievance 24 minutes B & W

Grade: High School, College **Source**: (7 or 2)

Discusses the four major steps that a grievance can go through. Brings in the function of an arbitrator and his study and decisions he makes.

The grievance discussed is over a worker who refuses to work on a hot cab of a freshly painted truck cab. Very candid.

Title: Grievance Hearing 15 minutes B & W

Grade: 7-12, College **Source**: (7)

A young female worker reports back to work after a six week absence due to illness to find that her job was lost because she did not request a leave extension. A successful arrangement is arrived at by both union and management after several steps are gone through in the grievance procedure.

This is a good film to show how a grievance is settled under a contractual agreement.

Title: The Labor Movement Beginnings and Growth of America 15 minutes Color

Grade: 7-12 **Source**: (3)

Development of organized labor movement from post Civil War to the beginning of World War I; methods by which labor sought to achieve its goals; the changing relationship between management and labor; and the changing national economy.

While somewhat dated, this is a good historical review suitable for junior or senior high school use.

Title: The Shop Steward 24 minutes B & W

Grade: Junior High, High School, College **Source**: (7 or 2)

The role of a shop steward is displayed in an actual grievance situation involving a worker, shop steward, foreman, and personnel manager.

The case evolves about a foreman who tries to justify low production by blaming an elderly worker.

Good film for Field Study use.

Title: Strike in Town 38 minutes B & W

Grade: 10-12, College **Source**: (7)

This story revolves about a single industry town which is at an impasse and on the verge of strike. The current issues which led to the strike are illustrated. Excellent collective bargaining scenes, realistic union meeting and a good portrayal of the impact of such a strike on the workers and families of the community evolve.

While somewhat dated, this film offers much "food for thought" and could be used with both high school and college students.

Title: The Union Structure 12 minutes Color (animation)

Grade: Junior High, High School, College **Source**: (7 or 2)

This film is orientated toward the Canadian system of government and labor organization. However, there are many similarities to the U.S. system.

Title: With These Hands 50 minutes B & W

Grade: High School, College **Source**: (2)

This is a very fine documentary of the history of the International Ladies Garment Workers Union.

The very poor working conditions are depicted along with the pressure of management from about the 1900's to present.

The demands and needs of the early workers are explained.

Title: Working Together 22 minutes B & W

Grade: Junior High, High School **Source**: (4)

A very candid story of a pencil manufacturer who, in the late 1930's, was faced with strong labor demands. The company's labor force organized and negotiated its first contract which required "give and take" by both parties. A grievance is settled over a simple problem. A strike occurs with settlement coming about with a mutual understanding and cooperation by both parties.

This film is more historical of union management problems than reflecting current issues. This would be acceptable for use as a historical review of labor-management cooperation prior to World War II.

MARKETING

Title: The Importance of Selling #610 20 minutes B & W

Grade: High School or College **Source:** (4)

The role of the salesman is explained in addition to catalogues and other forms of impersonal selling. Several of the products illustrated are out of date. The organizational charts shown use an "old" or outdated approach to modern marketing terminology. Many of the current marketing activities are illustrated but referred to by another name. Marketing research and sales forecasting discussed.

Possible value for Field Study Program.

Title: Production and Marketing [illegible]0 minutes B & W

Grade: High School **Source:** (7)

Discusses production and marketing as used in a familiar produce industry. This film is based on a true case history of a company that had been troubled with marketing problems and explains how it made desirable corrections to the success of this company. The first phase of this film deals primarily with producing goods while the final phase deals with the various marketing concepts. Explains the role of warehousing, cataloging, chain stores, etc.

Title: Credit - Man's Confidence Man 35 minutes B & W

Grade: 7-10 **Source:** (5)

An explanation of credit and how it makes it possible business expansion. Explains the beginnings and functions of Dun and Bradstreet and how the D. & B. reports are compiled and this information distributed. Explains how credit is established. Further study needed by the teacher and both pre- and post-discussion is necessary.

(Could be used in the finance area of Field Study)

Title: Financial Management 30 minutes B & W

Grade: High School and College **Source:** (7)

A very good example of how cash flow takes place in a company. The role of the financial executive is described in a true situation with the National Cash Register Company.

Explains the need for raising money for expansion and new product development and how this money can be raised through bonds, stocks, etc. The process or issuing new stock without deflating the value of existing stock is explained. The role of personal saving is emphasized in this process.

Title: Working Dollars 18 minutes Color (animated)

Grade: Junior High, High School, College **Source:** (14)

Explains how savings can be put to work in our economy through the process of investing. The process of the Monthly Investment Plan (MIP) is explained in detail.

Very good short film to be used in either industrial economics or financial control.

Title: Work of the Stock Exchange 15 minutes Color

Grade: 10-12, College Source: (3)

Although very much dated, this film is still relatively accurate in its description of the operation and function of the Stock Exchange.

This information is presented in very basic language and could also be used with selected junior high school students.

Could be used with Field Study students in finance or industrial economics.

GENERAL

Title: "Presidential Advisor" 10 minutes Color

Grade: Use with high school teachers in industrial arts, business, economics, etc., who expect to carry on a Junior Achievement Program. Source: (11)

The need function and role of a Junior Achievement advisor is explained in general terms. One activity is followed through from the selection of an advisor to the meeting with other advisor, the selection of possible projects, meeting the students and pointing up the attitudes before and after the activity.

Limited value for Field Study Program except to inform these people of this program and its operation.

The following list of film titles have been reviewed by the project staff and were found to be not suitable for Field Study use. They are either not appropriate, very much outdated, no longer available or otherwise not recommended.

The titles are included here in an attempt to avoid unnecessary previewing of these films in the future.

Age of Specialization
Distribution of America's Goods
First Impressions (1007)
Four Steps Forward (1205)
Fresh Winds Blow (1008)
Good Beginnings, A (905)
How Good is a Good Guy (1010)
In Common Brotherhood (1226)
Induction and Training
Productivity: Key to Plenty #403

SOURCE OF FILMS

1. AFL-CIO: American Federation of Labor and Congress of Industrial Organization,
   18 Sixteenth St., N.W., Washington 6, D.C.

2. CORNELL: College of Industrial and Labor Relations, Audio-Visual Center,
   Cornell University, Ithaca, New York

3. CORONET: Coronet Instructional Films, 65 East South Water St., Chicago 1, Illinois

4. ENCYCLOPEDIA BRITANNICA: Encyclopedia Britannica Films, Inc., 1150 Wilmette
   Avenue, Wilmette, Illinois

5. FEDERAL RESERVE: Federal Reserve Bank of New York, Public Information Department,
   33 Liberty St., New York 45, New York

6. GENERAL MOTORS: General Motors Corporation, Department of Public Relations,
   Film Distribution Section, 3044 W. Grand Blvd., Chicago 6, Illinois

7. INDIANA: University of Indiana, Film Library, Bloomington, Indiana

8. INSTITUTE OF LIFE INSURANCE: Institute of Life Insurance, 488 Madison Avenue,
   New York 22, New York

9. INT. FILM BUREAU: Int. Film Bureau, 57 East Jackson Blvd., Chicago 4, Illinois

10. JAM HANDY FILMS, INC.: Jam Handy Films, Inc., 2821 E. Grand Blvd., Detroit,
    Michigan 48211

11. JUNIOR ACHIEVEMENT, INC.: Junior Achievement, Inc., 51 West 51st St., New York,
    New York 10019

12. McGRAW-HILL: McGraw-Hill Text Film Div., 330 West 42nd St., New York 36, N.Y.

13. N.A.M.: National Association of Manufacturers, 2 E. 48th St., New York 17, N.Y.

14. NEW YORK STOCK EXCHANGE: New York Stock Exchange, 11 Wall St., New York, N.Y.

15. U.S.C. of C.: United States Chamber of Commerce, 1615 H. St., N.W., Washington 6, D.C.

ANNOTATED BIBLIOGRAPHY

GENERAL

Amrine, Harold T., Ritchey, John A., and Hully, Oliver S., Manufacturing Organization and Management, Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1957.

This text covers almost all areas as outlined in the student guide manual for observations. Included are many charts and diagrams which support the information presented in the book. The book, because of its scope and simplicity, offers possibilities as a supplementary or prime text for the directed field study.

Association of Consulting Management Engineers, Common Body of Knowledge Required by Professional Management Consultants, ACME, 347 Madison Avenue, New York 17, New York, 1957.

This book provides an excellent outline of the many phases of management through the use of definitions and charts describing the functions of management personnel. Included are seven activity area charts which are (1) research and development, (2) production, (3) marketing, (4) finance and control, (5) personnel, (6) external relations, and (7) secretarial and legal. This book is of particular value in showing the relationship between levels and functions of management.

Bethel, Lawrence, et al., Industrial Organization and Management, 4th edition, New York: McGraw-Hill, 1962.

A comprehensive text on the varied aspects of organization and management of industry, adequately illustrated and well written. An especially good visual bibliography, listing films and film strips according to special topics appropriate to the study of industrial organization and management, is included at the end of the book. Gives a good, broad treatment to the various aspects of the management and organization area of industry but in-depth coverage is not evident in most cases. Good for survey and general reference but not appropriate for in-depth study of any particular aspect of organization and management.

Drucker, Peter F., The Concept of the Corporation, New York: The New American Library, 1964.

This text is considered a classic study of the organization and management policies of General Motors Corporation which has become the model for large-scale corporations around the world. Through four sections the book covers capitalism in one country, the corporation as a social institution, the corporation as human effort, and economic policy in an industrial society.

Folts, Franklin E., Introduction to Industrial Management, New York: McGraw-Hill, 1963.

The twenty-four chapters of this book are divided among three major topics: concepts of industrial production; factors of production; and control of the production process. The section on factors of production and control of the production process have special significance to the directed field study. These sections provide adequate reference materials to support observations encouraged by the student guide book.

George, George S., Management in Industry, Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964.

The seven sections of this book cover many of the areas of the Directed Field Study. These areas include: managing and making decisions, organizing an enterprise, developing the product, managing the facilities of production, managing employees, determining employee's work and wages, and controlling product quality and cost. The text, however, lacks coverage of marketing. The book does contain several charts, diagrams, and examples which would be useful in the development of lesson materials.

Hart, Donald J., Business in a Dynamic Society, New York: The Macmillan Company, 1963.

This book which is designed for an introductory business administration course provides a good general overview of the many phases of industry presented in the Director Field Study. Of special interest are chapters on business organization, financing business operations, production, and distribution. In addition there are discussions on the legal, cultural, and moral enviroments in which business must function.

Hastings, Paul G., Fundamentals of Business Enterprise, Princeton, N.J.: D. Van Nostrand Co., 1961

The eight sections: historical foundations of business enterprise; management of business activity; production; information for management decisions; management of personnel; distribution; finance; and business and society - provide reference material for most phases of the directed field study. Of particular interest are chapters on early and recent business developments and the section of production.

Henderson, Herman B. and Haas, Albert E., Industrial Organization and Management Fundamentals, New York: The Industrial Press, 1961.

This book provides an introduction to the field of industrial organization and management which is valuable to the Directed Field Study. Chapters in this book which have particular significance for the program include: (1) history and challenge of industry; (2) forms of industrial ownership; (3) developing and engineering new products; (4) finances—planning capital requirements; (5) organization—the tool of management; (6) leadership and industrial relations; (7) wage and salary administration; (8) marketing the product; (9) production planning and control; (10) inventory control and purchasing; (11) quality control, and (12) cost reduction and cost control.

Jucius, Michael J. and Terry, George R., Introduction to Business, Homewood, Illinois: Richard D. Irwin, Inc., 1961.

This book provides a background into the general field of business management through seven main sections including: (1) fundamental aspects of business; (2) personnel; (3) marketing; (4) physical factors of business and manufacturing; (5) financing; (6) facilitation of business, and (7) government and business. The book provides reference material for all six weekly study categories and also includes charts and diagrams useful in developing teaching materials.

Moore, Franklin G., Manufacturing Management, Homewood, Illinois: Richard D. Irwin, Inc., 1961.

This text covers a broad segment of the content of the Directed Field Study including historical development of industry, organizational fundamentals, manufacturing economics, plant and equipment selection and layout, engineering, industrial relations, purchasing and finance, and marketing. Included in each of these major categories are many good diagrams, charts, and examples which would be beneficial to the preparation of teaching lessons and materials.

Musselman, Vernon A. and Hughes, Eugene H., Introduction to Modern Business, Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964.

This introductory business administration book offers a great deal of reference information for several of the topics covered in the Directed Field Study including: forms of organization, internal organization, personnel management, wage and salary administration, labor-management relations, production facilities and processes, marketing, and financing. Also included are several charts, diagrams and summaries which are of assistance in developing teaching materials.

Owens, Richard N., Management of Industrial Enterprise, Homewood, Illinois: Richard D. Irwin, Inc., 1965.

This text has nine main categories which cover the main content of the Directed Field Study. They include: organizational problems, equipment and working conditions, the product, production standards, wages and incentives, personnel relations, procurement and storage, planning and control of quantitives, and financial planning and control. The text has many good examples, diagrams, and case studies which would be helpful in understanding its content. Because of its wide scope and level of difficulty, this book would make a good text or alternate text to the Directed Field Study program.

Shubin, John A., Business Management, New York: Barnes and Noble, Inc., 1957.

This book, which is keyed to several of the other texts included in this bibliography, summarizes most of the phases of the Directed Field Study. The book is organized into seven parts: management and industry; business organization and promotion; research, products, and physical facilities; output efficiency; operating the business; industrial relations and compensation; and over-all administration and control. Also included are many useful charts, diagrams and examples along with an adequate bibliography and a self administering final test.

Strong, Earl P., The Management of Business, New York: Harper and Row, 1965.

This book which provides an introductory overview of the management of busines contains several chapters and sections useful to the Directed Field Study. Includ are the following: (1) the management process; (2) organization principles; (3) human relations; (4) communications; (5) financial management; (6) factory and production management; (7) marketing management; (8) personnel management, and (9) analysis of influences on management.

U.S. Department of Labor, Occupational Outlook Handbook, Washington: U.S. Government Printing Office, 1965.

This book provides excellent information on occupational trends in many areas.

Among the major categories of occupations treated are: (1) professional administrative, and related occupations; (2) clerical and sales occupations; (3) service occupations; (4) skilled trades and other manual occupations; (5) some major industries and their occupations; (6) agricultural occupations; and (7) governmental occupations. Also included in the book are sections on where to go for more information or assistance and choosing a career--the economic framework.

U.S. Government Printing Office, Technological Trends in Major American Industries, Washington, D.C.: U.S. Government Printing Office, Bulletin No. 1474, 1966.

A thorough analysis of the changes brought about by recent technological advances and the probable effect these advances will have on major American industries in the near future.

The report is divided into five parts: Part 1 contains definitions and concepts of technological change and its relation to production and employment; Part 2 summarizes the broad technological developments and their implications; Part 3 presents the methods of analysis, limitations, and sources of information; Part 4 contains 40 reports on major industries; and Part 5 contains a selected bibliography.

This report very adequately identifies new changes in technology and forecasts some reasonable changes for the future. It is well written and illustrated with many charts and should be of interest and useful to anyone concerned with technology and the directions it may well take in the near future.

HISTORY

Cochran, Thomas C., The American Business System, New York: Harper and Row, 1957.

This book which is a historical perspective of the American business system from 1900 to 1950 provides a ready reference for the historical study of modern industry.

Glover, John G. and Lagai, Rudolph L., The Development of American Industries, New York: Simmons-Boardman Pub. Co., 1959.

This book provides a reference work for the historical development and economic significance of thirty-six basic industries in America. The book provides technically correct, up-to-date descriptions of the major industries which make up the American industrial scene.

Litwack, Leon, The American Labor Movement, Englewood Cliffs: Prentice-Hall, Inc., 1962.

This book provides background in the understanding of the evolution of the American Labor Movement. The author has organized his book into six main sections which are: (1) background of discontent; (2) organization; (3) responses to unionism; (4) the weapons of resistance; (5) organizing the unorganized; and (6) labor at mid-century.

Robertson, Ross M., History of the American Economy, New York: Harcourt, Brace and World, 1964.

This book which is divided into four parts makes a good reference for the industrial history unit in the Directed Field Study. The parts are: (1) Colonial Period; (2) 1789-1860; (3) 1861-1920; and (4) 1920 to present. Also included in the book is excellent reference list providing a large number of entries for all segments of the economic history of the U.S.

U.S. Department of Labor. Brief History of the American Labor Movement. Washington, D.C.: U.S. Government Printing Office, 1964.

This book provides a concise overview of the historical development of the American labor movement. The chapters include: (1) early organization; (2) development of the modern labor movement; (3) between two world wars; (4) the Second World War and reconversion; (5) changes in the labor movement; (6) some outstanding features of the labor movement; and (7) postwar collective bargaining. Also included in the appendix of the book is a time line of important events in American labor history.

Walett, Francis G. Economic History of the United States. New York, N.Y.: Barnes and Noble, Inc., 1963.

This book in the college outline series provides information on all phases of economic growth from colonial America and its European background up to the mid-1900's. Also included is a bibliography of selected references for further reading and a self-administered final examination.

ECONOMICS

Cauley, Troy J. Our Economy. Scranton, Pa.: International Textbook, 1963.

This economics book has several chapters which are appropriate for the Directed Field Study. Among them are: (1) the elements of our economy; (2) business firms; (3) labor unions; (4) government; (5) economic growth; (6) business cycle; (7) supply and demand; and (8) the distribution of our national product.

James, Clifford L. Principles of Economics. New York, N.Y.: Barnes and Noble, Inc., 1956.

This book in the college outline series provides a good reference for the unit on economics. Of special interest are chapters on elementary economic concepts, evolution of economic activity, characteristics of modern economic systems, production organization, size of business enterprise, labor problems, and industrial concentration and government control.

Sloan, Harold S. and Zurcher, Arnold J. A Dictionary of Economics. 4th edition. New York, N.Y.: Barnes and Noble, Inc., 1961.

A dictionary of nearly 3,000 definitions or descriptions of words, phrases, or titles pertaining to formal economics. Such areas as economic history and theory, international trade, finance and exchange, international commercial policy, public finance, fiscal policy, taxation, money and credit are representative of some of the content. A fine reference device for economic based terms, phrases and concepts.

Wasson, Chester R. The Economics of Managerial Decision. New York, N.Y.: Meredith Pub. Co., 1965.

A rather well written treatment of economics as it applies to the business manager. The author looks at profits, decision making, forecasting, competition, pricing, costs and other related topics. A particularly good explanation of CPM and PERT is included, with example, under the topic of tools useful for comparing alternatives. Some charts and line illustrations are used in selected areas. Generally well written and could be useful for a reference to a different point of view of economics. Reads very well.

ECONOMIC GEOGRAPHY

Kilmm, Lester E.; Starkey, Otis P.; and Russell, Joseph A. Introductory Economic Geography. New York, N.Y.: Harcourt, Brace and World, 1956.

This book dealing with economic geography gives an excellent introduction to the geographic factors effecting industrial concentration and location. It is divided into four parts: (1) physical environments and human activities--world patterns, (2) economic organization and the use of resources, (3) representative world industries, and (4) major economic regions. The book has many charts, maps and pictures which lends to easy understanding of the principles presented in the text material.

Miller, E. Willard. A Geography of Manufacturing. Englewood Cliffs: Prentice-Hall, Inc., 1962.

This book which provides a discussion of world geography of manufacturing provides certain information beneficial to the Directed Field Study. Of particular interest is a chapter on Anglo-American manufacturing and chapters on geographical analysis of selected industries. Each analysis contains a section on that industry in the U.S. Analysis of the following industrial areas includes: iron and steel, aluminum, machine tool, motor vehicle, ship building, agricultural machinery, petroleum refining, portland cement, and cotton textile. The book also contains many maps which aid in the understanding of the concepts presented.

Thoman, Richard S. The Geography of Economic Activity. New York, N.Y.: McGraw-Hill Book Co., 1962.

This book provides a valuable background into the geography of economic endeavor. The book has five main sections dealing with: (1) the human being and his economics, (2) the natural environment, (3) world patterns of production and exchange, (4) the sources and application of energy, and (5) the roles of selected commodities. The book has many illustrations and examples which lend to the easy understanding of the principles presented.

PSYCHOLOGY

Gilmer, B. von Haller. Industrial Psychology. New York, N.Y.: McGraw-Hill Book Co., 1961.

This book provides a more than adequate reference for the discussion topic on industrial psychology as outlined for the Directed Field Study. The book contains seven appropriate parts including: psychology in industry; the industrial environment; personnel psychology; labor problems in industry; problems related to work; influence and social interaction; and the individual in industry. Chapters of more than passive interest include: human needs in industry, personnel selection, training in industry, labor-management relations, the nature of work, and the marketing mix.

Harrell, Thomas Willard. Industrial Psychology. New York, N.Y.: Holt, Rinehart and Winston, 1958.

This book dealing with industrial psychology has several chapters which are of interest to the Directed Field Study. Included in these are the following: (1) selection by interview and application blank, (2) personnel tests, (3) training, (4) attitudes and job satisfaction, and (5) psychological aspects of labor relations.

Maier, Norman R. F. Psychology in Industry. Boston, Mass.: Houghton Mifflin, 1965.

This text dealing with psychology in industry has several chapters which have a significance for the Directed Field Study. Among the more important chapters are: (1) the place of psychology in industry, (2) the psychology of attitudes, (3) individual differences, (4) the use of psychological tests in selection and placement, (5) industrial training, (6) motivation and work, (7) safety, (8) the working environment, and (9) psychological factors in labor turnover. Also included in the book are many well designed charts and examples which support the material being presented.

Tiffin, Joseph and McCormick, Ernest J. Industrial Psychology. Englewood Cliffs, N.J.: Prentice-Hall, 1965.

This book dealing with industrial psychology provides reference material needed for the Directed Field Study. Sections of this book which are of particular significance to the field study include: personnel selection and appraisal and the job and work situation. Also of interest in another section is a chapter on training in industry.

SOCIOLOGY

Brown, J. A. C. The Social Psychology of Industry. Baltimore, Md.: Penguin Books, Inc., 1954.

This is not a traditional text on industrial psychology. The author indicates that he wishes to put down for the manager, personnel department, time and motion study engineer or layman, certain aspects of "human nature" and social organization which must be taken into account by anyone attempting to reorganize factory life. This book is good for insight and overview reading on the industrial psychology subject but does not go into great detail. Well written and reads very well.

Miller, Delbert C. and Form, William H. Industrial Sociology. 2nd edition. New York, N.Y.: Harper and Row, 1964.

Special attention is given to people who work and the social relations existing between them. A point is made with reference to previous industrial sociology research being done in the factory thereby coloring industrial sociology to mean "factory" sociology. Attempts to refer to all forms of economic activity including financial, commercial, productive, and professional. Well illustrated and well written, with good selected bibliographies at end of each chapter. A valuable reference book on industrial sociology.

Schneider, Eugene V. Industrial Sociology. New York, N.Y.: McGraw-Hill Book Co., 1957.

This book dealing with the social relations of industry and the community provides an adequate resource for the discussion topic of industrial sociology. The book contains four main parts entitled: (1) social theory and the productive systems, (2) the social structure of industry, (3) the social structure of trade unionism, and (4) industry and society. The six chapters of part four, which are industry and community, industry and social stratification, industry and minority groups, industry and the family, industrialism and government, and industrialism and social change, provide much background on the effects of industry on social institutions.

Spaulding, Charles B. An Introduction to Industrial Sociology. San Francisco, Calif.: Chandler Pub. Co., 1961.

This book which provides a background for the understanding of the social context of industry, is divided into four main sections. The sections include (1) occupational roles in the community setting, (2) management organization, (3) union organization, and (4) the accommodation of formal organization. Of particular interest to the Directed Field Study are chapters on occupations in American society, occupational mobility, social stratification of occupational groups, human relations in business organizations, trends and problems of American unionism, and collective bargaining.

INDUSTRIAL RELATIONS

Beach, Dale S. Personnel: The Management of People at Work. New York, N.Y.: The Macmillan Co., 1965.

This industrial relations text has five parts which apply to the Directed Field Study: (1) management, employees, unions, and organization, (2) employment and development of people, (3) understanding and managing people, (4) financial compensation, (5) security. Of special interest are the chapters dealing with unions and management, collective bargaining, recruitment and selection, selection testing and interviewing, employee appraisal, training, grievance handling, wage and salary administration, and wage incentives.

John, Rossall James. Personnel and Industrial Relations. Homewood, Ill.: Richard D. Irwin, Inc., 1960.

The five main categories of this book: employment, development, wages and hours, labor-management, and administration; give an adequate overview and introduction to the field of industrial relations. Each of the five areas are presented in depth with case studies to emphasize and strengthen principles presented in the text. Of particular interest to the Directed Field Study Program are the sections on employment and development. These reinforce many of the industrial-relations observations encouraged in the student guide manual.

Jucius, Michael J. Personnel Management. Homewood, Ill.: Richard D. Irwin, Inc., 1963.

This book which provides for detailed study in the field of industrial relations has several chapters which are of interest for the Directed Field Study. Among them are: (1) a perspective of personnel management, (2) organizational structure of personnel management, (3) job requirements, (4) interviewing and counseling, (5) tests, (7) merit ratings, (8) job evaluation and wage classification, (9) communications, (10) union-management relations, and (11) training operative employees.

Owen, W. V. and Finston, Howard V. Industrial Relations. New York, N.Y.: Appleton-Century-Crofts, 1964.

This book dealing with the total field of industrial relations has several chapters which are appropriate for the Directed Field Study. Among the significant chapters are: (1) what is industrial relations, (2) the industrial relations process, (3) the labor force, (4) management, (5) production, prices, wages, and profits, (6) what is collective bargaining, (7) the role of arbitration in industrial relations, (8) training, and (9) placement. Also included in the book are several charts and diagrams which would be helpful in preparing teaching materials.

Shils, Edward B. Automation and Industrial Relations. New York, N.Y.: Holt, Rinehart and Winston, 1963.

This book provides an explanation of automation and its effects of plant and workers. Chapters of particular interest are: (1) what is automation, (2) impact of automation of national economic security, (3) factors determining a firms ability to automate, and (4) challenge of management of machines and men in the automated plant.

ENGINEERING

Barnes, Ralph M. Motion and Time Study. New York, N.Y.: John Wiley, 1963.

The early chapters of this text provide basic information into motion and time study which supplements the study of this area in the Directed Field Study. Of special interest to the field study are chapters on the definition and scope of motion and time study, work methods and design, process analysis, activity charts, operation analysis, film analysis, the relation of motion and time study to wage incentives, time study, and work sampling. Included in these chapters are many charts and examples designed to aid and further understanding of the principles presented.

Karger, Delmar. The New Product. New York, N.Y.: The Industrial Press, 1960.

This book provides basic information on finding, testing, developing, costing, pricing, protecting, advertising and selling new products. The book presents the information in a manner which enables an understanding of the evolution of an idea into a marketable product. Included are many examples and diagrams which also assist in the understanding of new concepts.

Muther, Richard. Practical Plant Layout. New York, N.Y.: McGraw-Hill Book Co., 1955.

This book provides a background for the study of plant layout. Of particular interest to the Directed Field Study are the two sections concerned with factors influencing plant layout and how to lay out a plant. Included in the book are many charts, diagrams, and illustrations which are useful in both preparing teaching materials and in understanding the concepts presented in the chapters.

FINANCE

Gilbert, Harold. Corporate Finance. New York, N.Y.: Barnes and Noble, Inc., 1956.

The outline series book which is keyed to a numbered financial texts offers support to several topics included in the student's guide book. Of special interest are chapters on forms of business organization, corporate officers, stocks, borrowed capital, internal control, and working capital.

Specthrie, Samuel W. Basic Cost Accounting. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963.

This book dealing with cost accounting provides reference information for the general area of financial control as outlined for the Directed Field Study. Chapters of particular appropriateness include: manufacturing costs, nature and use of cost accounting for material, cost accounting for labor, factory burden, and direct costing. The book contains many examples and problems which are beneficial to the understanding of the overall topic.

PRODUCTION

Eilon, Samuel. Elements on Production Planning and Control. New York, N.Y.: The Macmillan Co., 1962.

This text is divided into four sections which have direct application on the content of the Directed Field Study. They are: (1) general introduction, (2) pre-planning, (3) planning, and (4) control. Under these four sections are twenty chapters all of which are appropriate for reference in the field study. Also included are many charts, diagrams, and figures which would be of benefit in preparing teaching materials.

Mayer, Raymond R. Production Management. New York, N.Y.: McGraw-Hill Book Co., 1962.

This text provides a comprehensive reference for the production phase of the Directed Field Study. The eight parts, which all apply to sections of the observation units, are: (1) methods analysis, (2) work measurements, (3) wage incentives, (4) production planning and control, (5) inventory control, (6) plant layout and material handling, (7) quality control, (8) engineering economics.

MacNiece, E. H. Production Forecasting, Planning, and Control. New York, N.Y: John Wiley, 1961.

This book provides a comprehensive study of the phases of production engineering in relation to its social and economic implications. Included are chapters on types of production, manufacturing planning, automation, factory planning, sales forecasting, control, production planning, scheduling production, loading, evaluating results, cooperation with quality control, and solving planning problems. The book also contains many diagrams, charts, and examples which provide a good resource for developing teaching materials.

Reinfeld, Nyles V. Production Control. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959.

This book provides a ready reference to the phases of production control included in the Directed Field Study. The two chapters on the meaning and scope of production control and principles of production control and the section on production control activities are of special interest. Certain charts and diagrams included in the text would be of value to preparing teaching materials.

Roscoe, Edwin Scott. Organization for Production. Homewood, Ill.: Richard D. Irwin, Inc., 1963.

This book provides reference materials for the marketing, engineering, and financial section of the Directed Field Study along with a strong presentation for the production phase. Chapters of particular significance are: (1) production, (2) historical development, (3) the product, (4) manufacturing methods and equipment, (5) plant location, construction, and layout, (6) production control, (7) quality control, (8) purchasing, (9) sales, and (10) personnel administration. The text also has many charts, diagrams, and examples which are useful in developing teaching materials.

MARKETING

Buskirk, Richard H. Principles of Marketing — The Management View. New York, N.Y.: Holt, Rinehart and Winston, 1961.

The book offers handy reference to all phases of the study of marketing as outlined in the student's guide for the Directed Field Study. It contains five parts of interest: marketing in perspective, consumer and industrial markets, planning the product, distribution channels, pricing problems, and promotions. Of special interest within these sections are chapters on marketing research problems, the industrial user, product planning, the role of channels of distribution, the role of promotion in marketing, and advertising. Also included are a helpful bibliography and a useful glossary of terms.

Corey, E. Raymond. Industrial Marketing. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1962.

This book which deals with the marketing phases of industrial products provides reference material for the marketing segment of the Directed Field Study. Of particular interest are chapters on determining product specifications, developing a product policy, pricing products, and planning market strategy.

Dunn, S. Watson. Advertising — Its Role in Modern Marketing. New York, N.Y.: Holt, Rinehart and Winston, 1961.

This book which covers a narrow phase of study of marketing offers worthwhile information on several facets of advertising. Of interest to the Directed Field Study Program are chapters on advertising and the marketing program, controls over advertising, the advertising agency, and the advertising media.

Heidingsfield, Myron S. and Blankenship, Albert B. Marketing. New York, N.Y.: Barnes and Noble, Inc., 1959.

This book, which is correlated to several marketing texts, contains a number of chapters which support the readings for the study of marketing as a phase of the Directed Field Study. Chapters which have particular value include those on marketing as a process, the nature of consumption, the wholesale distribution structure for manufactured goods, techniques of direct marketing, selected channels of distribution, the physical handling of goods, and marketing research. Also included is a valuable glossary of marketing terms which originally appeared in the Journal of Marketing.

Messner, Frederick R. Industrial Advertising. New York, N.Y.: McGraw-Hill Book Co., 1963.

This book provides an adequate reference for the advertising section of the marketing phase of the Directed Field Study. Of particular interest are chapters on the role of advertising in industrial marketing, advertising and the corporate image, industrial direct advertising, and selection of media for space advertising.

Wheeler, Bayard O. Business: An Introductory Analysis. New York, N.Y.: Harper and Row, 1962.

A comprehensive, introductory view of business including basic coverage of resources, business functions, management, objectives and goals, business and environment and forces which affect business and management. Well written and well illustrated and a good reference for introductory or overview use. Little treatment of production and engineering aspects of industry is noted. Should be useful as a reference on management, marketing and background.

Zacher, Robert V. Advertising Techniques and Management. Homewood, Ill.: Richard D. Irwin, Inc., 1967.

This book is designed to give students a comprehensive introduction to advertising's role as a vital tool in the distribution of goods and services and an appreciation of its functions as a communications device, not only in marketing, but in shaping ideas and attitudes on many matters. It attempts to meet the needs, not only of those students wishing to secure a solid foundation for further work in the field, but also of the much larger group merely seeking a basic knowledge of the place of advertising in our business and social scene.

LABOR

Butler, Arthur D. Labor Economics and Institutions. New York, N.Y.: The Macmillan Co., 1961.

The volume provides a ready reference during the phase of the Directed Field Study which is devoted to the study of organized labor. Of particular interest are the chapters on growth of unions, theory of unions, nature of collective bargaining, unions and wages, and major trends.

Reynolds, Lloyd G. Labor Economics and Labor Relations. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959.

This book's two main sections, Trade Unionism and collective bargaining and economics of the labor market, provides good supplemental reading for the Directed Field Study section on organized labor. Of particular interest are chapters of the evolution of American unionism, trade union philosophy and objectives, bargaining procedures and tactics, strikes, strike tactics, and strike prevention, and dynamics of labor supply.

Tripp, L. Reed. Labor Problems and Processes. New York, N.Y.: Harper and Brothers, 1961.

This book contains sections of the history of the American labor movement, problems and characteristics of the labor market, labor legislation, collective bargaining, and government labor policy which are appropriate for reference in the Directed Field Study Program.

Vroom, Victor H. Organization Work and Motivation. New York, N.Y.: John Wiley, 1964.

Written for the student of psychology or the man familiar with psychological terms. Few illustrations. Early chapters on historical perspective and the nature of motivation are particularly appropriate for introduction to motivation theories. A very extensive bibliography is included at the end of the book.

Should serve as a good reference book for inquiry into the various aspects of the relationship between the motivations of people and the work they perform.

Gerbracht, Carl and Robinson, Frank E. Understanding America's Industries. Bloomington, Ill.: McKnight and McKnight, 1962.

Of particular interest to the Directed Field Study is section eight of this text. This section includes discussions on what is mass production, tooling up, time study, and precision; specialization and the production line, coordination and management; and automation.

Hawe, Robert W. and Schaefer, Carl J. Manufacturing in the School Shop. Chicago: American Technical Society, 1960.

The seven parts of this book are designed to aid an industrial arts teacher in the teaching of manufacturing in the school shop. These sections include manufacturing, what to make, how to make it, production methods, plant layout, personnel, and the business end. The book has many illustrations and assignment designed to aid the teacher's talk.

Keane, George R. Teaching Industry Through Production. Washington, D.C.: American Industrial Arts Association, 1959.

This booklet provides basic understanding of the need and reasons for teaching production in a school shop. Included are discussions of introducing and developing the idea, organizing the class, organizing for production, discussion sessions, and in eighth grade experience. Also included are typical areas and topics which a classroom teacher should have to consider in developing a line production item for instructional purposes.

Olson, Delmar W. Industrial Arts and Technology. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963.

This book provides a background study of industrial history, an analysis of industry and classification of subject matter for industrial arts, and a proposal for a new organization of content for industrial arts. The text presents one of several ways that the content of the Directed Field Study could be applied to industrial arts programs in the public schools

ANNOTATED PERIODICAL LIST

The following annotated list of periodic publications is suggested as sources the industrial arts teacher should use to secure information which may be used to keep himself abreast of the changes in the various facets of American industry.

Administrative Management. Geyer-McAllister Publications, 212 Fifth Avenue, New York, New York, 10010.

Articles on methods, personnel and equipment suitable for administrators or business managers. Regular departments such as "personnel problem clinic" could be helpful in keeping up to date with new techniques in such things as interviewing job applicants.

Business History Review. 214 Baker Library, Soldiers Field, Boston, Mass. 02163.

Articles dealing with various aspects of trade and business written from a historical standpoint. A book review section covers various historical works pertaining to a wide variety of business subjects. Most articles are well documented and could be used to broaden knowledge regarding origins and developments of various businesses and the historical effects of commerce and business.

Business Management. Management Magazines, Inc., 22 W. Putnam Avenue, Greenwich, Connecticut 06830.

Articles are written especially for the manager of business. There are many "how to" types of articles covering specific problems such as costs, production, control, profits, and others. A regular feature, "Workshop for Management," serves to present novel ideas useful in business management. Good for getting the managers point of view.

Dun's Review and Modern Industry. Dun and Bradstreet Publications Corp., Box 3088, Grand Central Station, New York, New York 10017

Articles of a broad nature pertaining mostly to management of various industries. Regular features such as "Voice of Industry," "The Labor Front," and "Trend of Business" are particularly good for overview and keeping up to date with industry in general.

Federationist. AFL-CIO Building, 815 Sixteenth Street, N.W., Washington, D.C. 20006.

Official voice of the AFL-CIO containing articles of national scope regarding labor, economics, research and education, all written from the labor viewpoint. Section on book reviews and new pamphlets evaluate timely material on the labor front. This publication could be very useful in keeping aware of labor ideas and opinions.

Forbes. Published semi-monthly, Forbes, Inc., 70 Fifth Avenue, New York, New York

Contains concise, well-written articles on new industries, products, and corporate management. Articles are well researched and are very current. Most articles are designed to provide investment information. Very good on finance and current industrial development.

__Fortune__. Time, Inc., 540 N. Michigan Avenue, Chicago 11, Illinois.

Outstanding staff of writers and researchers prepare wide-ranging articles on new industries and their products and processes. Articles are aimed at management level but provide teacher with excellent information on new technologies.

__Industrial and Labor Relations Review__. Cornell University, Ithaca, New York 14850.

Wide variety of articles in the labor management area of industry. Excellent section on recent publications catalogued under headings "Education and Research," "Collective Bargaining," "Labor Disputes" and others. Book reviews are very good and cover the field of industrial and labor relations. Very good for overview of new literature in this area of industry.

__Industrial Bulletin__. New York State Department of Labor, State Campus, Albany, New York 12226.

Articles are written from the labor standpoint and cover unions and labor-management relations. Good coverage of New York State labor problems and solutions is evident. An occasional article of national or international scope appears in the publication. This periodical may be useful in keeping up-to-date with labor developments in New York State.

__Industrial Research__. Industrial Research, Inc., Beverly Shores, Ind. 46301.

Articles are of a very technical nature dealing with specific scientific topics. Regular features such as "Washington Report" and "New Products" may have some value for industrial arts teachers. However, this publication is usually very technical and aimed at the scientist engaged in physical research.

__Iron Age__. Chilton Company, Chestnut and 56th Streets, Philadelphia, Pa., 19139.

Feature articles under the headings, "News of the Week," "Engineering-Production Developments" and "Markets and Price Trends," cover the heavy metal-working industry quite well. Many up-to-date capsule articles under headings such as "Metalworking Newsfront" and "Industry Trends" may be useful in keeping abreast of developments in products, management, labor and government as it affects the heavy metalworking industries.

__Monthly Labor Review__. Superintendent of Documents, Washington, D.C. 20402.

Articles orientated to labor and labor related problems contain numerous charts and statistics. Book reviews and section on developments in industrial relations contain very good up-to-date with developments in the labor field.

__Nation's Business__. Chamber of Commerce of the U.S., 1615 H Street, N.W., Washington, D.C. 20006.

Timely articles from the management standpoint regarding the state of business, government, and specific topics involving controversial subjects. Regular sections titled "Washington, A Look Ahead," "Executive Trends," "Washington Mood," "State of the Nation," and others, give good clues to pressing problems of industry today. Written with a slant in favor of management.

Research Development. F. D. Thompson Publications, Inc., Waseca, Minn.

Articles are well written and generally contain information of a technical nature or are geared to the management area. Capsule treatment of R/D and government relationships is titled "Washington R/D Roundup." Some articles such as "What the Creative Man Demands of Management" (Aug. 1966), are especially thought provoking. In general, this publication is written for the professional engineer or engineering manager.

Steel. Penton Publishing Company, Penton Building, Cleveland, Ohio 44113.

Technical articles predominate with occasional issues devoted to trends, labor and government problems and forecasts. Articles are well written, short and well illustrated. Regular feature "Metalworking Week," gives news highlights, forecasts and trends in the industry in capsule form. Generally written from the management and technical point of view.

Survey of Current Business. Superintendent of Documents, Washington, D.C. 20402.

Well documented articles containing charts and statistics which cover the current business situation. Most material is on the financial aspect of business and current developments. May be useful in keeping up-to-date with current developments in business.

For a comprehensive list of publications and directories request: Sources of Emerging Management Principles from: Educational Service Bureau, Wall Street Journal, New York, New York.

APPENDIX E

STUDENT WORKBOOK

WORKBOOK FOR
DIRECTED FIELD STUDY
IN INDUSTRY

DEPARTMENT OF FIELD SERVICES
DIVISION OF INDUSTRIAL ARTS AND TECHNOLOGY
STATE UNIVERSITY COLLEGE
OSWEGO, NEW YORK

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PREFACE

As a future industrial arts teacher, the acquiring of a clear understanding and insight of how industry is organized and functions is essential for interpreting industry in the public school program.

The observation and study of industry for which this workbook and program has been developed is designed to fulfill a need as seen by industrial arts educators and members of The State University College at Oswego Advisory Council. Through the experiences written into the program, it is hoped the student will develop many new and varied understandings about industry and labor, their organization, purpose, functioning and contributions to our industrial society. The understandings gained from these experiences, as they are carried into the public school industrial arts programs, should encourage considerable change in the scope of content and teaching being carried on.

This workbook has been developed over a three year period and has been thoroughly reviewed for general organization and content by competent specialists in education, business and labor. While the workbook is not all inclusive, it is not intended to limit the student in his study and observations but is to be used as a general guide. The student is encouraged to go beyond the scope of the content and questions whenever the interest and opportunity affords.

It is intended that an essential feature of the workbook shall be to assist the prospective industrial arts teacher to analyze and synthesize his observations and experiences into meaningful concepts about industry. These concepts should provide a useful foundation upon which future teaching and work with students in the classroom and laboratory can be based.

EXPLANATION OF SECTIONS OF

STUDENT WORKBOOK

READINGS: A list of required readings and supplemental references is provided for each of the major sections of the workbook. This list includes textbook chapters and supporting references which are deemed essential for obtaining background understanding in each area. The supplemental list is provided for those students who wish to investigate the area in greater depth.

In order to derive maximum benefit from observations and discussions of the week, it is essential that the student read the textbook assignment during the weekend prior to the week's study. This allows for greater understanding and comprehension of those things which will be seen or discussed during the following week.

DIRECTED OBSERVATION SECTION: A directed observation section has been developed for each of the industry-based weeks of the observation and study portion of the Directed Field Study. The section is designed to provide a base of departure for the questioning and seeking of information during your industry study. The questions provided should be viewed as a guide and should not be considered as being all-inclusive or limiting in scope. Effort should be made to answer as many of the questions as possible. In some instances, information may not be readily available due to particular circumstances or the nature of the company.

In answering the questions, it is advisable to develop a paragraph which contains the information necessary to answer the several questions in each major category rather than a series of short answers for each question.

It should be kept in mind that this section is provided to guide you in gathering broad information about the several functions of industry.

The information gathered should serve as a resource for future teaching and therefore, care and effort should be used in gathering and recording the material.

MATRIX: This learning-discussion device has been developed for each of the industry-based weeks of study and is designed to encourage the comparison of the company to which you have been assigned with two other companies. The device should be viewed as an outline for discussion and not as a copy exercise. The comparison of other companies with your own in filling out the matrix should provide a broader perspective on the organization and operation of industrial enterprises.

Time will be provided during the Friday seminar each week to complete the information in the matrix through discussion with two other students in the Field Study.

OCCUPATIONAL INFORMATION: For each industry-based week of study, a section has been provided for the collection of occupational data. The data should include the job title, salary range (not specific salary) for the occupation, and a brief listing of the duties and educational requirements for the job. The student should select jobs contained in the area of study for the week to encompass various ability and responsibility groups including both salaried and hourly workers. This information becomes valuable in assisting public school students in occupation appraisal and choice; therefore, careful attention to the collection of complete and factual data is essential. Information in this section might be supplemented by referring to the Occupational Outlook Handbook.

CONCEPTS: At the end of each section of the workbook which is based on one of the main elements of industry, a section is provided for the identification of significant concepts gained from that week's study of industry. This section provides opportunity to list those concepts along with the supporting facts and principles.

Careful thought and consideration should be exercised to identify those elements of the week's study which are essential for good student understanding of that phase of the industry. Upon completion of the concept identification, space has been provided for describing a number of suggested student activities which might be used by the teacher for developing understanding of the concepts in the minds of public school students.

It is emphasized that this section, when conscientiously completed each week, will become a valuable and important reference resource in the final two weeks of the Field Study for the further development of curriculum resource units.

INTRODUCTORY SEMINARS

DIRECTED FIELD STUDY IN INDUSTRY

OBJECTIVES OF THE PROGRAM:

It is hoped the following objectives will be achieved with those students selected for this program:

1. To prepare future industrial arts teachers to interpret the broad functions of industry in their industrial arts classes.

2. To prepare future industrial arts teachers to interpret the broad functions of labor organizations in industrial arts classes.

3. To present a fundamental understanding of the history and development of industry and labor organizations to future industrial arts teachers.

4. To give the rudiments of industrial sociology, industrial psychology, and industrial economics to future industrial arts teachers.

5. To give future industrial arts teachers an opportunity to identify the important concepts about American industry which need to be taught in the public school and to identify activities appropriate for developing the concepts with public school students.

REQUIREMENTS:

1. Attend and take an active part in seminars and discussion meetings during the experience.

2. Make extensive observations during a six week off-campus section of the course.

3. Prepare and present appropriate curriculum materials.

4. Prepare all required reports and studies.

5. Read all assigned references.

SPECIAL SUPPLIES:

1. Textbook: Amrine, Ritchie and Hulley, Manufacturing Organization and Management. (2nd Ed.)

2. Directed Field Study Workbook.

LIBRARY READING REFERENCES

The following sections of the workbook contain assignments to do selected readings from library sources to acquaint you with sources of information and literature in the fields related to industry. The following references and periodicals are suggested sources for completing the assignments.

HISTORY OF AMERICAN INDUSTRY AND LABOR

1. Dulles, Foster, Labor in America. New York, Thomas Y. Crowell, 1960.
2. Faulkner, Harold U. and Starr, Mark; Labor in America. New York, Oxford Book Co., 1957.
3. Fite and Reese, An Economic History of the United States, Chapters 3, 7, 15, 26 and 32. Massachusetts, Houghton, 1959.
4. Heilbroner, The Making of Economic Society, Chapters 1, 4, 5, and 8. New Jersey, Prentice-Hall, 1962.
5. Rayback, Joseph G., A History of American Labor. New York, Macmillan, 1959.
6. Taft, Phillip, Organized Labor in American History. New York, Harper and Row, 1964.
7. Labor History Magazine.

INDUSTRIAL PSYCHOLOGY and/or INDUSTRIAL SOCIOLOGY

1. American Journal of Sociology
2. American Psychologist
3. American Sociological Review
4. Business Week
5. Fortune Magazine
6. Harvard Business Review
7. Human Relations
8. Industrial Bulletin
9. Industrial and Labor Relations Review
10. Journal of Experimental Psychology
11. Journal of Social Psychology
12. Monthly Labor Review
13. Nations Business
14. Occupational Outlook Quarterly
15. Personnel Psychology
16. Psychological Monographs
17. Psychological Review
18. Social Forces

HISTORY OF INDUSTRY
AND
LABOR ORGANIZATIONS

HISTORY OF INDUSTRY AND LABOR ORGANIZATIONS

Purposes:

To develop an understanding of the evolution of American industry from colonial times to present day.

To develop an understanding of the evolution of labor organizations from craft guilds to modern labor unions.

To develop an awareness of the resources dealing with the history of industry and labor organizations.

Assigned Reading:

(TEXT) Chapter 2 and Chapter 19, pp. 371-375
The Growth of American Industry. New York: National Association of Manufacturers, 1963.
American Labor Movement. Washington: U. S. Department of Labor, 1964.

Assignment:

Select an important event or period in American industrial or Labor history and complete a depth study of your selection.

Speaker(s):

Name: ____________________

Position: ____________________

Company or organization: ____________________

Films:

Title: ____________________

Distributor: ____________________

Title: ____________________

Distributor: ____________________

ORGANIZATION OF INDUSTRY AND LABOR ORGANIZATIONS

ORGANIZATION OF INDUSTRY AND LABOR ORGANIZATIONS

Purpose:

To develop an understanding of the common methods of organizing large groups so that an overall task may be accomplished.

Assigned Reading:

(TEXT) Chapter 3

Industrial Organization and Employees. New York: National Association of Manufacturers, 1963.

The American Achievement. New York: American Can Company, 1961.

Assignment:

Explain, in paragraph form, three (3) different industrial arts laboratory activities of your choice in which you could include principles of organization as used in industry. Cite specific situations, giving a general description of the activity and the way organization principles are to be used.

Speaker(s):

Name: ______________________________

Position: ______________________________

Company or organization: ______________________________

Films:

Title: ______________________________

Distributor: ______________________________

Title: ______________________________

Distributor: ______________________________

INDUSTRIAL SOCIOLOGY

INDUSTRIAL SOCIOLOGY

Purposes:

To develop an understanding of some of the effects of industry on the structure of our society.

To become familiar with selected journals containing research on industrial sociology.

Assigned Reading:

Books, periodicals, journals, papers, etc. of the student's choice.

Assignment:

Read and prepare a short summary of two selected pieces of research dealing with an effect or effects of industry on the region or community in which it is located. Identify sources of information used.

Speaker(s):

Name: ____________________

Position: ____________________

Company or organization: ____________________

Films:

Title: ____________________

Distributor: ____________________

Title: ____________________

Distributor: ____________________

INDUSTRIAL
PSYCHOLOGY

INDUSTRIAL PSYCHOLOGY

Purposes:

To develop an understanding of some of the effects that industry has on the individual.

To become familiar with selected journals publishing research in industrial psychology.

Assigned Reading:

Books, periodicals, journals, and papers of the student's choice.

Assignment:

Read and prepare a short summary of two selected pieces of research dealing with an effect or effects of industry on the life of an individual. Identify sources used.

Speaker(s):

Name: ______________________________

Position: ______________________________

Company or organization: ______________________________

Films:

Title: ______________________________

Distributor: ______________________________

Title: ______________________________

Distributor: ______________________________

INDUSTRIAL ECONOMICS

INDUSTRIAL ECONOMICS

Purpose:

To develop an understanding of the economic principles related to functioning of American industry.

Assigned Reading:

(TEXT) Chapters 1 and 23.
American Capitalism. New York: National Association of Manufacturers, 1960.
A Comparison of Three Economic Systems. New York: National Association of Manufacturers, 1958.
Do You Know Your Economic ABC. Washington: U.S.Dept. of Commerce, 1965.
Profits and American Economy. Washington: U.S.Dept. of Commerce, 1965.

Assignment:

Develop three activities for a High School Industrial Arts program that would teach the function of "profit" in our industrial society.

Please use only a half typewritten page for each activity, keeping your thoughts brief and to the point. Be as specific as possible in the space available.

Speaker(s):

Name: ______________________________

Position: ______________________________

Company or organization: ______________________________

Films:

Title: ______________________________

Distributor: ______________________________

Title: ______________________________

Distributor: ______________________________

PREPARATION
FOR
PARTICIPATION

PREPARATION FOR PARTICIPATION

I. GENERAL CONSIDERATIONS:

DO	DON'T
Accept all privileges and courtesies specifically extended to you.	Assume privileges not extended to you.
Accept restrictions placed upon you.	Accept responsibilities not outlined in the course.
Be prompt to all appointments.	Waste important work time and opportunities with tardiness.
Remain for full work shifts during observation sessions.	Leave early unless prior arrangements have been made.
Remain a neutral observer and reporter.	Take sides or agree with personnel involved in a difference of opinion.
Objectively report what you observe and are told.	Make critical judgements.
Remember that you are an invited guest.	Assume you are an employee or executive.
Make accurate reports.	Publish any of your reports without prior consent of the company involved and the university.

II. OBSERVATION TECHNIQUES

DO	DON'T
Remember that there are several correct ways of doing a task.	Pre-judge what you observe.
Attempt to discover the reason behind a method of doing a task. Ask why!	Assume reasons for anything.

Observe and accept what you observe and hear.	Offer suggestions for change.
Carefully select observation station.	Choose a station which will interfere with the normal operation of the plant.
Watch procedures and events.	Give the impression you are spying on workers.
Exercise freedom of movement specifically assigned to you.	Enter restricted areas or other areas until permission is granted.

III. INVESTIGATION TECHNIQUES:

DO	DON'T
Ask questions which allow for full and complete explanation.	Force people into defensive positions by your questions.
Accept information willingly given.	Press for information.
Listen attentively to all information given you.	Stop listening when you feel your question is answered.
Make thorough observations before asking questions.	Ask questions which can be answered by simple observation.
Keep in confidence what you are told during observation session.	Reveal conversations with other personnel.
Listen extensively.	Offer opinions or information.

IV. REPORTING TECHNIQUES:

DO	DON'T
Be objective.	Give opinions.
Report what you see.	Edit reports.

Report what you are told as an interpretation of the source of information.	Report interpretation as an observation.
Limit reports to purposes at hand.	Ramble through unrelated information.
Use professional reporting style. (3rd person)	Use casual informal reporting style.

V. EXPECTATIONS OF COLLEGE STUDENTS:

DO	DON'T
Dress as a future member of the education profession.	Dress as a casual college student.
Conduct yourself in a dignified manner.	Treat this experience as an informal social experience.
Think before you speak.	Respond in terms of previous experience.
Be alert, active learners.	Be passive and disinterested.
Avoid extreme behavior.	Differ appreciably from the people you are working with.
Assume that you are a learner.	Assume that you have all the answers.
Ask for a work center where your materials may be kept.	Be demanding of space and facilities.

INDUSTRIAL RELATIONS

INDUSTRIAL RELATIONS

PURPOSES:

To be able to interpret to public school industrial arts students:

1. the organization of companies to promote the wise use of personnel.
2. industrial employment practices.
3. labor relations activities of industry.
4. industrial attempts to provide healthful, safe working conditions.
5. the training program of industry.
6. industrial wage and salary policies.
7. the concepts of job evaluation, merit ratings, and promotions.

REFERENCES:

(TEXT) Chapters 18, 20, 21.

Can I Get the Job. Detroit: General Motors Corporation

Wages and Prices in an Industrial Economy. New York: National Association of Manufacturers, 1962.

Supplementary References:

Bethel and others, Industrial Organization and Management, Chapters 18, 19, 21, 23, 24.

Gagne, Psychological Principles in Systems Development, Chapters 4, 7, 9, 10, 11, 12.

Hart, Business in a Dynamic Society, Chapter 4.

Mayer, Production Management, Part 3.

Musselman and Hughes, Introduction to Modern Business, Chapters 5, 10, 11, 12.

Shubin, Business Management, Chapters 23 and 24.

Wheeler, Business: An Introductory Analysis, Chapters 6, 21, 22.

Monday Seminar Notes:

Speaker's name: ______________________________

Position: ______________________________

Company or organization: ______________________________

Topic: ______________________________

Summary and Notes:

Monday Film Notes:

Title: ____________________

Producing Company: ____________________

Distributor: ____________________

Title: ____________________

Producing Company: ____________________

Distributor: ____________________

DIRECTED OBSERVATION SECTION

INDUSTRIAL RELATIONS

Directions: Under each outline statement make proper notes regarding your observations, sources of information, and other similar data. The questions below the statements are for guiding thinking but do not limit your observations to the questions.

I. ORGANIZATION

A. Overall corporate organization (stop chart at department head level)
   1. What is the distinct line of authority within this organization?
   2. Show line responsibilities and staff responsibilities.
   3. Why are some functions placed in line authority and why are some placed in staff responsibility?
   4. Is the line of authority strictly followed?

B. Organization of industrial relations or personnel department.
   1. Show organization chart and describe the functions of each major position on the chart.

C. Organization of the labor union in the plant (if union is present).
   1. If there is a labor union present in the plant, which one or ones are represented?
   2. If there is not a labor union present in the plant, is there any other type of employee organization representing a group or groups of employees concerned with wages, hours of work, working conditions, etc.?

II. EMPLOYMENT

A. Determining need for additional employees.
   1. How is the hiring supervisor notified of a need for a new employee?
   2. What type of controls are established over hiring replacement and additional employees?
   3. Why are these controls established?
   4. Who (title, not name) determines the status (permanent, temporary), skill requirements (skilled, semi-skilled, etc.) and shift to be worked for new employees.

B. Method for applying for a position or job.
   1. What are the steps or procedure for applying for work?
   2. Is there a different procedure for applying for different jobs or positions? If so, why is this necessary and what significant characteristics are emphasized for each class of employment (clerical, sales, production, managerial, etc.)?
   3. Obtain samples of application blanks and other significant hiring material and attach to packet.

C. Selection.

1. Interview
   a. To what extent is interviewing used for various positions?
   b. Who initially (title, not name) interviews applicants?
   c. What is the purpose of this interview?
   d. Is there an interview form or guide? Why or why not?

2. Testing
   a. To what extent is testing used for various positions?
   b. What types are used (samples if possible)?
   c. What types of information are obtained from test?
   d. To what use is this information put?
   e. What seems to be the trend in testing by industry?

3. **Other selection procedures.**
   a. **What other procedures are used to help determine the ability of the applicant for a job opening?**

4. **Final selection**
   a. **What criteria are used in making final selection among applicants?**
   b. **Who (title, not name) makes the final selection?**
   c. **Why does this person have the final decision making power?**

5. **Orientation to the job**
   a. **After the employee is hired, what is the procedure used in orienting him to the company and the job?**
   b. **What is the purpose of this orientation?**
   c. **Why is orientation important?**
   d. **Is the industry-wide trend to more or less formal orientation of employees to jobs and why?**

6. **Transfer**
   a. **What is the policy for transfer of employees between shifts, departments, and plant locations?**
   b. **Who (title, not name) makes transfer decisions?**
   c. **How are employees selected for transfer?**
   d. **What are the advantages and disadvantages of transfers to both company and employee?**

7. **Lay-off and termination**
   a. **What is the procedure for lay-off and termination? Describe differences, if any.**
   b. **What are the reasons that cause (1) lay-off?**
      (2) termination?
   c. **Who decides which employees are (1) laid-off?**
      (2) terminated?
   d. **What rights to re-employment, unemployment insurance, severence pay, etc. do employees have who are (1) laid-off or (2) terminated?**

III. SALARY AND WAGE

A. Method of compensation
  1. What are the ways a person is paid directly for his work (hourly, salary, etc.)?
  2. What are the significant differences between these methods?
  3. What is meant by exempt and non-emempt employees?
  4. What determines the classification which can be used?
  5. What are the advantages and disadvantages to both worker and company of:
    a. exempt and non-exempt classification?
    b. hourly, salary, and incentive compensation?

B. Wage structure (salary and wage schedule)
   1. How was the structure determined for each major type of employee (sales, clerical, production, managerial)?
   2. What group or groups were instrumental in determining the schedule?
   3. What factors explain the differences in pay for different jobs?
   4. How is the schedule changed and with what frequency for each major type of employee?

C. Merit Review
   1. How is an employee's performance review?
   2. Are there different methods for various levels of employee responsibility?
   3. Who (title, not name) conducts the reviews?
   4. Why are reviews necessary or important?
   5. What is the national or industry-wide trend in using merit review in determining pay for employees?

D. Promotions (to higher paying jobs)
  1. How are employees selected for promotion?
  2. What are some significant criteria for promotion?
  3. Who (title, not name) decides on promotions?
  4. Why does the person perform this function?

IV. COMMUNICATIONS

A. In-plant
  1. What means are employed by the industrial relations department to communicate with employees?
  2. To what class of employee is this communication directed?
  3. What type of information is communicated?
  4. Why is communication important?
  5. What is the industry-wide or national trend for in-plant communication devices?

B. Company - community communications (Public Relations)
   1. Is there a public relations program?
   2. What is the need for public relations programs?
   3. What are the major activities or phases of the program?
   4. What is the trend for industrial public relations programs?

V. INDIRECT LABOR COSTS (Fringe Benefits) (Do not be concerned with actual costs)

A. Introduction
   1. Differentiate between programs required by law and those not required by law.
   2. What are other general names attached to Fringe Benefits?
   3. What are the economic and psychological advantages of fringe benefits to both company and employee?

B. Hospitalization and Medical
   1. Is there a health benefit program present?
   2. Who pays for it (if more than one, what percent by each)?

C. Vacation
   1. How much vacation with pay is available to employees?
   2. How long does an employee have to be employed to benefit?
   3. Does it vary with seniority? If so, what is the philosophy behind the practice?
   4. What are the national or industry-wide trends as to length of vacations in your company and industry-wide?

D. Holidays
   1. How many holidays with pay are allowed?
   2. Who determines them?
   3. What is the trend in relation to the number and frequency of paid holidays?

E. Supplemental unemployment compensation (other than state), if any

1. **Who pays for it?**
2. **How does an employee qualify?**
3. **What are the legal requirements, if any, on the company and employee?**
4. **How long does it pay?**
5. **What is the national or industry-wide trend for this benefit?**

F. Supplementary disability and employee compensation (other than state)

1. **Is it required? If so, by whom?**
2. **Who pays for it?**
3. **How does an employee qualify?**
4. **What is the national or industry-wide trend for this benefit?**

G. Recreation program
   1. Does the company support recreation programs?
   2. What are the reasons for either supporting or not supporting this type of program?
   3. If a program exists, how is it administered?
   4. What is the industry trend for company sponsored recreational programs?

H. Company assistance in relocation
   1. Does such a plan exist?
   2. If so, to what type of employee is it available?
   3. Who pays the cost; employee, company, or both?
   4. What are, or would be, the advantages and disadvantages of such a program?
   5. What seems to be the trend for industry supported plans for relocating employees?

I. Retirement plans
   1. Does the company assist in whole or in part in a paid pension plan other than Social Security?
   2. How does an employee qualify?
   3. What is the national or industry-wide trend for this type of program?

J. Required by law programs
   1. What fringe benefits are required by law?
   2. Who pays for them - if both company and employee, give percent for each.
   3. What is the trend for required fringe benefit programs?

K. Other indirect employee benefits

VI. SAFETY PROGRAMS

A. Policy
   1. Is there a company policy? If so, attach copy if possible.
   2. Why is safety so important to companies?

B. How administered

1. Who is responsible for safety programs?
2. What activities are sponsored to encourage safety?
3. Why are these activities used?

C. Precautions

1. What special safety precautions are taken?
2. What safety equipment must the employee wear?
3. How does he obtain the above equipment?

D. Accident treatment

1. Does the company maintain a first aid or medical treatment center?
2. Who staffs it?
3. What services are available?

E. Other safety information

VII. ADDITIONAL OBSERVATIONS

List additional observations and information which you feel significant for this unit of study.

REVIEW AND APPLICATION

OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

DIRECTED FIELD STUDY IN INDUSTRY
SUMMARY MATRIX

On each of the following items compare the operation of your company with two others. Use different companies for each of the weeks.

INDUSTRIAL RELATIONS	COMPANY #1 Co. name__________	COMPANY #2 Co. name__________
METHOD OF EMPLOYMENT (trace employment procedure from street until worker becomes a permanent member of the company)		

INDIRECT LABOR COSTS (include all costs not figured as direct wages)		

WAGE AND SALARY PROGRAMS: (include method of compensation, wage structure, merit review, promotions, etc.)		

SAFETY PROGRAM:

CORPORATION ORGANIZATION	COMPANY #1 Co. name__________________	COMPANY #2 Co. name__________________
TYPE OF ORGANIZATION (Do not draw organization chart; describe type of organization present)		
TYPE OF OWNERSHIP		

APPLICATION SECTION

Complete the following section in terms of the phase of industry being studied during the week.

A. Concept identification:

List as many concepts about industry as possible which you have been able to identify from this week's study which you consider important for a good understanding of this phase of industry.

CONCEPT	FACTS TO BE INCLUDED IN THE DEVELOPMENT OF THE CONCEPT

B. Concept Presentation:

Select one or more concepts identified in Part A and develop a number of suggested activities which would be appropriate for use in developing these concepts in an industrial arts class. The class may be at a level of your choosing. (Identify the level.)

ENGINEERING IN INDUSTRY

ENGINEERING IN INDUSTRY

PURPOSE:

To be able to interpret to public school industrial arts students:

1. the development of industrial product ideas.
2. the types of engineering used by industry.
3. the concept and method of designing manufacturing processes.
4. the fundamentals of plant engineering.
5. the function of research and development in industry.

REFERENCES:

(TEXT) Chapters 5, 7, 16, 22
Industrial Research and Development. New York: National Association of Manufacturers, 1962.
Patents. New York: National Association of Manufacturers, 1958.

Other references:

Bethel and others, Industrial Organization and Management, Chapters 6, 7, 8, 9, 10

Buskirk, Principles of Marketing, Chapter 10

Gange, Robert M., Psychological Principles in Systems Development, Chapter 5

Hawley, George F., Automating the Manufacturing Process, Chapters 9, 10

Karger, The New Product, Chapters 2, 3, 6.

Musselman and Hughes, Introduction to Modern Business, Chapter 9

Shubin, Business Management, Chapter 9 and 10

Monday Seminar Notes:

Speaker's name: ____________________

Position: ____________________

Company or organization: ____________________

Topic: ____________________

Summary and Notes:

Monday Film Notes:

Title: ______________________________

Producing Company: ______________________________

Distributor: ______________________________

Title: ______________________________

Producing Company: ______________________________

Distributor: ______________________________

DIRECTED OBSERVATION SECTION

ENGINEERING IN INDUSTRY

Directions: Under each outline statement make proper notes regarding your observations, sources of information, and other similar data. The questions below the statements are for guiding thinking but do not limit your observations to the questions.

I. RESEARCH (if a research department is not present, use alternate on page 59)

A. Handling of research.

1. **What activities are carried on by the research department?**
2. **How are research projects identified and handled? What are the sources of ideas?**
3. **Who (title) is responsible for the research group and what is his relationship to other departments in the company?**
4. **How are outside ideas obtained and treated?**

B. Research projects.
   1. What type of research projects are undertaken?
   2. How is a budget established for the research projects?
   3. What controls on progress and expenditures are established?
   4. What sort of time limits, if any, are set?
   5. What are the advantages and disadvantages of the above controls or research?

C. Methods used.
   1. How is research stimulated and performed (individual, team, brainstorming, etc.)?
   2. Why are these methods used?
   3. What skills and proficiencies are needed in research personnel?

ALTERNATE:

I. RESEARCH

A. If no research is carried on by the company, discuss the following:
   1. What methods are used to gain information that would normally come from company research?
   2. Why are these methods used rather than sponsoring company research?
   3. What are the problems encountered by using this source of information?

II. DEVELOPMENT - (Caution: observe Restricted Areas and Information)

A. Organization.
   1. How is the development group organized?
   2. What functions or activities are assigned to the development group?
   3. How are the functions grouped for supervision and efficient fulfillment of requirements?

B. Product development and improvement.

1. New Products
    a. Where do ideas for new products come from?
    b. How are these ideas screened?
    c. What controls or limits are set for new product development?
    d. What steps are involved in developing new products and at which steps are go/no-go decisions made?
    e. Why is it important for frequent evaluation of product worth during development?
    f. Who (title) enters into these evaluations and why?

2. Product improvement.
    a. How is the need for improvement established and by whom (title)?
    b. What factors enter into the decision on which products need or will be improved?
    c. What steps are involved in the improvement of existing products?
    d. How frequent are evaluations of the improvement made?
    e. Who enters into these evaluations?
    f. Why is product improvement and redevelopment important or necessary?

C. Process development and improvement.
  1. New processes.
    a. What factors are considered in designing new processes?
    b. Where is new technology for the process obtained?
    c. What steps are followed in designing new processes?
    d. What limits or controls are placed on the development?
    e. Who evaluates the process in terms of these limits and why is the evaluation needed?

2. Process improvement.
    a. How is the need for improvement identified?
    b. What factors enter into the decision for process improvement?
    c. What steps are involved in improving existing processes?
    d. Who evaluates the improvement and how frequently?

D. Cost estimate.
   1. How is the anticipated cost of goods to be manufactured determined?
   2. What data are needed?
   3. What effect does anticipated cost have on the design?
   4. How often are cost estimates made?
   5. Why are estimates important?

E. Other activities of development group.
  1. Discuss other activities of the development group in terms of:
    a. Functions of activity
    b. Importance to the company
    c. Responsibility of personnel.

III. PRODUCT ENGINEERING - (Caution: observe Restricted Areas and Information)

A. Product design.
  1. Who (title) has the responsibility for the designing function of the product?
  2. How is the total responsibility for the product design divided for efficient operation of the department?
  3. What function or activities make up the total product design activity?
  4. Who (title) has final say on the design or parts of the design?
  5. Why is the responsibility placed there?
  6. What channels are open to communicate ideas and suggestions between product engineering and manufacturing engineering departments?

B. Specifications.

1. Who (title) is responsible for preparing specifications for the product?
2. What considerations must be made in preparing specifications?
3. Why are each of the considerations important?
4. What information is necessary in preparing specifications?
5. What commercial or governmental standards are used and why (US, SAE, GOV., etc.)?

C. Standards and tolerances.

1. What are standards and tolerances?
2. Who (title) is in charge of preparing standards and tolerances for manufacture of the product?
3. How are they arrived at?
4. What is the importance of standards and tolerances?
5. Can they be changed? If so, by whom and for what reasons?

D. Product testing (Engineering test).
  1. What is the function of product testing?
  2. How is the testing accomplished?
  3. Does testing procedure vary for different qualities of similar products? Why?
  4. How is the product testing correlated with real life?
  5. What means are used to communicate test results to engineering and production groups?

E. Factory - Follow-up.
  1. What provisions are made for product engineers to assist in manufacturing difficulties?
  2. What is the role of the product engineer in this type of activity?

F. Sales - Assistance.
   1. Is there a program to provide engineering aid to adapt products to customers' needs?
   2. What type of assistance is available?
   3. Who pays for the cost of these services?

IV. CONTROLS OF RESEARCH, DEVELOPMENT & ENGINEERING

A. Allocation of projects.
   1. How are projects assigned to members of engineering and research staffs?
   2. Who assigns the projects?
   3. What criteria are used in assigning projects?

B. Time limits for projects.
  1. How are project time limits set?
  2. What criteria are considered in setting them?
  3. How are time limits adjusted when necessary?
  4. Who (title) sets time limits and why is the responsibility placed there?

C. Protection.
  1. How is security maintained during development of products?
  2. Are patents used? When and why?
  3. What are the advantages and disadvantages of a patent?

D. Budget (not actual figures).
  1. How are budgets for projects established?
  2. What factors are considered when establishing budgets?
  3. Can they be changed? How and for what reason?
  4. What factors are included in the budget?
  5. At what points are decisions on cost and worth of projects made?

V. PLANT ENGINEERING

A. Installation of equipment.
  1. Who (title) is in charge of equipment installation?
  2. Who (title) decides when equipment is to be installed or moved?

B. Maintenance.
   1. Who (title) is in charge of maintaining equipment?
   2. Is there a preventative maintenance program? If so, describe how it operates?
   3. How are the needs for corrective maintenance reported and handled?

C. Safety on equipment.
   1. Who is in charge of engineering for safety on equipment?
   2. Are safety devices developed by the engineering staff?
   3. Is there a suggestion program operated to get workers' opinion of safety features?

VI. ADDITIONAL OBSERVATIONS

Discuss observations which you made this week which you have not listed during previous weeks.

REVIEW AND APPLICATION

OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

OCCUPATIONAL INFORMATION

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OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

ENGINEERING IN INDUSTRY	COMPANY #1 Co. name____________________	COMPANY #2 Co. name____________________
RESEARCH AND DEVELOPMENT (who handles it, to what extent is it used, what methods are used, etc.)		

PRODUCT ENGINEERING (Who, what methods security controls, how tolerances and standards are developed, product testing, etc.)		

PLANT ENGINEERING (Include layout, installation, etc.)		

APPLICATION SECTION

Complete the following section in terms of the phase of industry being studied during the week.

A. Concept identification:

List as many concepts about industry as possible which you have been able to identify from this week's study which you consider important for a good understanding of this phase of industry.

CONCEPT	FACTS TO BE INCLUDED IN THE DEVELOPMENT OF THE CONCEPT

B. Concept Presentation:

Select one or more concepts identified in Part A and develop a number of suggested activities which would be appropriate for use in developing these concepts in an industrial arts class. The class may be at a level of your choosing. (Identify the level.)

PRODUCTION

PRODUCTION

PURPOSE:

To be able to interpret to public school industrial arts students:

1. the fundamentals of production of goods and/or services.
2. the concept of production control.
3. the organization of production areas.
4. the fundamentals of motion study and time and motion study.

REFERENCES:

(TEXT) Chapters 4, 8, 10, 14, 15.
Productivity and Production in Industry. New York: National Association of Manufacturers, 1962.

Other references:

Bailey, Basic Motion Study

Bethel and others, Industrial Organization and Management, Chapters 11, 12, 15, 16, 17.

Hart, Business in a Dynamic Society, Chapter 7.

Mayer, Production Management, Parts 5 and 7.

Musselman and Hughes, Introduction to Modern Business, Chapter 14.

Shubin, Business Management, Chapter 17 and 21.

Wheeler, Business: An Introductory Analysis, Chapters 19 and 20.

Monday Seminar Notes:

Speaker's name: ______________________

Position: ______________________

Company or organization: ______________________

Topic: ______________________

Summary and Notes:

Monday Film Notes:

Title: ____________________

Producing Company: ____________________

Distributor: ____________________

Title: ____________________

Producing Company: ____________________

Distributor: ____________________

DIRECTED OBSERVATION SECTION

PRODUCTION

Directions: Under each outline statement make proper notes regarding your observations, sources of information, and other similar data. The questions below the statements are for guiding thinking but do not limit your observations to the questions.

I. MANUFACTURING ENGINEERING

A. Plant layout.

1. What factors must be considered in designing a plant layout?
2. Why are these factors important?
3. What are the steps used in plant planning?
4. Who (title) is in charge of plant layout and to whom does he report?
5. What relationship exists among the layout department and other engineering and production departments?
6. What features in the plant layout provide for:
    a. Use of material
    b. Efficient production methods
    c. Effective use of human resources
    d. Quality control
    e. Economical operation of plant.

7. How is the ability to change built into a layout?

B. Methods study.
1. What factors are considered in determining the methods or procedures of performing direct and indirect production factors?
2. Why are these factors important?
3. What sequence of activity is involved in methods study?
4. Who is in charge of method study and to whom does he report?
5. What is the relationship between the methods group and the product engineering group?
6. Why is intercommunication between these groups important?
7. What is the relationship between methods and cost of production?

C. Work measurement.

1. What methods are used to establish standard times for performing production tasks?
2. What is the procedure used in accomplishing the methods?
3. What factors are gathered in a time study?
4. How is the data gathered used?
5. What is the importance of work measurement?

D. Material handling study.

1. What factors are considered in a material handling study?
2. Why are these important?
3. To what use are the findings put?

E. Tooling.
   1. How are tooling requirements established?
   2. What information is needed to establish requirements?
   3. Who decides on tooling needed and why is the responsibility placed at this level?
   4. How is tooling modified to change process?
   5. How is tooling cost budgeted and met?
   6. What effect does volume anticipated have on type of tooling and the cost of the tooling?

F. Cost accountability.
   1. How is the manufacturing department set up to provide cost accountability in the product?
   2. What kinds of checks are made?
   3. How is efficiency measured?
   4. What controls are on scrap?
   5. Why is cost accountability critical?

II. PRODUCTION PLANNING, FORECASTING, & CONTROL

A. Scheduling - General.

1. What is the general procedure followed in establishing a production schedule?
2. What factors must be considered?
3. Why are these factors important?
4. Who (title) is responsible for the scheduling function and to whom does he report?
5. How and why is a schedule changed?

B. Types of schedules.

1. What type of schedule is used? (PERT, CPM, other)
2. How does it operate?
3. What controls or checks are built-in to check on progress toward meeting the schedule?
4. How are variations between production actualities and the schedule handled?
5. Who is in charge of coordinating production with the schedule?

C. Schedule communication.
   1. How is the schedule communicated to: (show forms and describe methods)
      a. Purchasing department
      b. Tooling department
      c. Production groups
      d. Marketing department
      e. Factory shipping and receiving departments
      f. Other affected departments.
   2. What is the lead-time for the various phases of production?
   3. How are the lead-times established?
   4. Are lead-times different for the different functions and why?

3

D. Factors affecting schedules.

1. How does multiple plant operations affect schedules?
2. How does the activity of the general economy affect schedules?
3. How does the availability of raw materials and component parts affect the schedules?
4. How does consumer acceptance of the product affect the schedule?
5. How does general level of production of the product and other products in the plant affect scheduling?
6. What affect does organization of the production groups (product or process organization) have on scheduling?

III. MANUFACTURING PROCEDURES

A. Organization.
  1. Are the production departments organized along product or process lines?
  2. Why is the organizational structure used?
  3. How are the departments coordinated into an efficient operation?
  4. What are the advantages and disadvantages of both types of organization?
  5. How is coordination accomplished between shifts in the same department?
  6. What problems are encountered in the coordination?

B. Production operations and processes.
  1. What are the predominate production operations and processes used by the company?
  2. What is involved in accomplishing these?

C. Production sequence.
   1. What are the steps in the production of the product or service?
   2. Have the steps changed in light of new technology? If so, how and why?
   3. On a separate page develop a flow chart of the production sequence.

D. Controls on production.
   1. What kind of controls does a production supervisor have to judge his performance?
   2. Why are these controls necessary or important?
   3. What controls are established to provide cost accountability for the production activities?

IV. QUALITY CONTROL

A. Organization.
   1. How is the quality control group organized?
   2. To whom are they responsible?
   3. How are their findings communicated to:
      a. the production groups
      b. the scheduling departments
      c. other interested departments.
   4. What is the relationship between the production departments and the quality control departments?

B. Procedures.

1. What procedures and standards are used to check the acceptabilities of parts or raw materials?
2. How is inspection scheduled for the various stages of production?

C. Devices.

1. What devices are used for inspection and quality control?
2. What types of information are gained from these devices?
3. Why is this information important?

V. ADDITIONAL OBSERVATION:

Discuss observations which you made this week which you have not listed previously.

REVIEW AND
APPLICATION

OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

MANUFACTURING PRODUCTION	COMPANY #1 Co. name ________	COMPANY #2 Co. name ________
PRODUCT OR SERVICE PRODUCTION (Describe the steps in the production on one product or service produced in your company)		

PROCESS OR MANUFACTURING ENGINEERING (Include process design, tooling, developing production methods, designing material handling, etc.)		

PRODUCTION PLANNING AND CONTROL (Describe techniques, factors considered, etc.)		

QUALITY CONTROL: (How is quality maintained in reference to the goods or services produced?)		

WORK MEASUREMENT: (Time and motion study - procedure used, type of job studied, etc.)		
USING TIME AND MOTION RESULTS (To what uses are the results of time and motion study put?)		

APPLICATION SECTION

Complete the following section in terms of the phase of industry being studied during the week.

A. Concept identification:

List as many concepts about industry as possible which you have been able to identify from this week's study which you consider important for a good understanding of this phase of industry.

CONCEPT	FACTS TO BE INCLUDED IN THE DEVELOPMENT OF THE CONCEPT

B. Concept Presentation:

Select one or more concepts identified in Part A and develop a number of suggested activities which would be appropriate for use in developing these concepts in an industrial arts class. The class may be at a level of your choosing. (Identify the level.)

LABOR

LABOR

PURPOSE:

To be able to interpret to public school industrial arts students:

1. the role of the individual in the overall production of goods and services.
2. the role of the labor union or other labor organization in the overall production of goods.
3. the effect that industry has on the life of the individual worker.

REFERENCES:

(TEXT) Chapter 19.
Labor-Management Developments - Challenge to the Nation, New York: National Association of Manufacturers, 1961.
Economic Implications of Union Power, New York: National Association of Manufacturers, 1962.
Why Unions, Washington: AFL-CIO.

Other references:

Bethel and others, Industrial Organization and Management, Chapter 2.

Butler, Labor Economics and Institutions, Chapters 6, 7, 25

Davis, Human Relations at Work, Chapters 14, 15.

Gilmer, Industrial Psychology, Chapters 3, 5, 11.

Reynolds, Labor Economics and Labor Relations, Chapters 3, 4, 5.

Monday Seminar Notes:

Speaker's name: ______________________________

Position: ______________________________

Company or organization: ______________________________

Topic: ______________________________

Summary and Notes:

Monday Film Notes:

Title: ______________________________

Producing Company: ______________________________

Distributor: ______________________________

Title: ______________________________

Producing Company: ______________________________

Distributor: ______________________________

DIRECTED OBSERVATION SECTION

Section I

LABOR (IN PLANT)

(To Be Completed By All Students)

Directions: Make proper notes regarding your observations, data obtained, and conclusions drawn directly under each topic. Indicate sources of information wherever possible.

I. Classifications of all employees in your assigned industry.

   A. Determine approximate number or percent of total for each of the following categories:
      1. Semi-skilled workers (production)
      2. Skilled workers (production)
      3. Clerical, office
      4. Professional (engineers, scientists, accountants, etc.)
      5. Management (middle and top management)

   B. What is the nature of the job requirements and qualifications which determine the above classifications?

   C. Plot a chart which will illustrate this data.

II. Job descriptions.

A. Explain the system or technique that is used to develop job descriptions for the employees of this company. If possible, include a sample of a job description and refer to it in your explanation.

B. Select two or three job descriptions of various types and review. After review of these job descriptions, arrange to observe a worker on the job and compare what his duties and responsibilities are in comparison with the job description. Note any differences and any conclusions you can draw.

III. Employee Development and Training.

A. Determine and explain what programs and services are available for the development and training of all classifications of employees. Include these areas:

1. On-the-job training (management and technical).
2. Apprentice training program.
3. In-plant optional educational programs.
4. In-plant professional personnel counseling.
5. Tuition reimbursement for job related college study.
6. Released time or leave of absence for study.
7. Other programs or services available to employees that would up grade their skills, general education, or generally improve their opportunity to be more productive employees.

Section II

(To Be Completed Only If A Labor Union(s) Is Present)

Note: Gather as much of this data as possible directly from the officers of the union.

I. Organization of Labor Unions.

A. The Union Local
1. How is the Local structured?
2. How is the Local leader selected and for what term of office?
3. What are his responsibilities and duties?
4. Does the Local hold regular meetings? If so, how often, when and where?
5. What benefits are derived by Local union officers while working in the plant? (eg. paid time for union duties, layoff protection, etc.)
6. Where is the Local office?
7. How large a district does this Local serve?

B. Labor - Management Communications
1. What channels of communication are open between the labor representatives and company management?
2. What channels of communication are available between the inplant union leader and union members?
3. How important is the human relations factor and how is this accomplished through informal communications.

C. Local labor representatives selection (in-plant)

1. How is the local labor union representative (or steward) selected within the plant?
2. Does this position require special qualifications or training? Explain.

D. Local labor representative duties

1. What are the duties and responsibilities of the labor representative or steward within the plant?
2. How are these duties determined?
3. Who determined them?
4. Why are these duties necessary?

E. Union membership
  1. Must all employees join the union as a condition of employment? When?
  2. What does it cost - initiation fee, dues, assessments?
  3. What are the requirements of members?
  4. How are dues and assessments collected?
  5. Briefly define: (1) union shop, (2) agency shop, (3) open shop, (4) closed shop, (5) preferential shop.

F. Meetings
  1. How often are meetings held?
  2. How is the membership notified?
  3. Is attendance required? If not, how is it encouraged?
  4. What rules govern conduct of the meetings?
  5. In general, how much participation is there at union meetings and how effective is this participation?
  6. What type of business matters are conducted in open meetings and what matters are dealt with by executive board?

G. Grievance Procedure (Try to make arrangements to sit in on a grievance hearing if at all possible.)

1. Determine the grievance procedure currently in effect as explained in the present contract.
2. Briefly describe this procedure indicating each of the major steps from initiation through settlement at the ultimate level. Identify the "positions" or "offices" such as the steward, foreman, and/or plant superintendent that a grievance would likely go through, or to, in this process.

H. Grievance Case Review

1. If possible, review the files of three recent grievances to determine the nature of each, what steps it went to before settlement, and the results.
2. Select one of these and write a brief case study.
3. Comment on the effectiveness of this process in this plant as you see it.

I. Changes and/or improvements brought about by union

1. Identify any local improvements or changes in working conditions under the last contract in any of the following categories: wages, additional paid holidays, vacations, shorter work week, retirement.
2. Were these improvements brought about through regular contract negotiations? If not, was a strike or other union action required?

J. Philosophy of Management

1. Briefly explain the current philosophy of the management - of the company - toward organized labor in general and, specifically, in this company.

Section III

(To Be Completed Only If A Union Is Not Present In The Plant)

I. Employee Organization

A. Are there organized channels for workers to discuss their views, problems, and other matters with management? If so:

1. What is the name of the organization?
2. What is its function?
3. How is it organized?
4. Do the employees think this organization works well?
5. How effective is this organization in the eyes of the workers — in the eyes of management?

B. Attempts to organize workers

1. Have there been recent attempts, either internally or externally, to organize the workers of this company into a union?
2. What organizational activities were carried on to interest the workers in the union?
3. What events or activities, if any, did the management of the company engage in to discount the need for a union?
4. Was a vote taken? What was the result?
5. Which union made the organizational attempt?

II. Grievance Procedure

A. Grievance Committee

1. Is there an organized grievance committee?
2. What parties are represented in the composition of the committee? Is there equitable representation?

B. Interview of Committee

1. Select at least one member from management and one from the employees who serve on the grievance committee to determine their reaction to the effectiveness of this committee.

C. Grievance Case Review

1. If possible, review the files of three recent grievances to determine the nature of each, what steps it went to before settlement, and the results.
2. Select one grievance and write a brief case study.
3. Comment on the effectiveness of this process in this plant as you see it.

III. Philosophy of Management

A. Briefly explain the current philosophy of the management of this company toward organized labor in general and, specifically, in this company.

B. In your judgement, explain why unions have been unsuccessful in organizing this plant.

C. What seem to be the advantages to the company and to the employees by remaining non-union?

D. Indicate any change that may be anticipated in the near future regarding employee-employer relations.

Section IV

Labor (Union Seminar)

Review questions in this section prior to seminar with union representatives.

I. Unions

A. Types
1. What, generally, are the differences between craft and industrial unions?
2. Compare craft and trade unions in terms of number of employers a member might have in a year, wages, frequency of work, training for the job, union size, fringe benefits, etc.

B. Structure and Functions of Unions

1. Illustrate the structure of the AFL-CIO as it exists today.
2. What is the function of the following: shop steward, local president, business agent, field representatives?
3. How do apprenticeship training programs operate in the trade unions?
4. How do companies become organized?

C. Future Trends of Unions

1. What is the future of the unions in the United States?
2. What are some of the key problems facing unions today?
3. What are some of the major demands and goals of organized labor nationally today?
4. What legislation is anticipated at both the state and federal levels in the near future?

II. Mediation - Conciliation - Arbitration

A. Briefly define and explain the difference between mediation, conciliation, and arbitration.

B. How are the people involved in these activities chosen or selected?

C. What qualifications must these people have to function in these roles?

REVIEW AND
APPLICATION

OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

OCCUPATIONAL INFORMATION

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OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

LABOR ORGANIZATION	COMPANY #1 Co. name__________	COMPANY #2 Co. name__________
UNION REPRESENTED: (Which union is present, if none, what other groups?)		
GRIEVANCE PROCEDURE:		

APPLICATION SECTION

Complete the following section in terms of the phase of industry being studied during the week.

A. Concept identification:

List as many concepts about industry as possible which you have been able to identify from this week's study which you consider important for a good understanding of this phase of industry.

CONCEPT	FACTS TO BE INCLUDED IN THE DEVELOPMENT OF THE CONCEPT

B. Concept Presentation:

Select one or more concepts identified in Part A and develop a number of suggested activities which would be appropriate for use in developing these concepts in an industrial arts class. The class may be at a level of your choosing. (Identify the level.)

CONI

FINANCIAL CONTROL

FINANCIAL CONTROL

PURPOSES:

To be able to interpret to public school industrial arts students:

1. the general accounting function in industry.
2. the process of cost accounting in industry.
3. the control of inventory of raw materials, parts, assemblies, components, etc.
4. the disbursement and spending of the industrial sales dollar.

REFERENCES:

(TEXT) Chapters 12, 13, 17, 24.

Capital and Economic Growth. New York: National Association of Manufacturers, 1962.

Chase, Stewart, How to Read an Annual Report. New York: Standard Oil Company

Other references:

Amrine, Ritchey, and Hulley, Manufacturing Organization and Management, Chapters 3, 16, 17, 20.

Bethel and others, Industrial Organization and Management.

Hart, Business in a Dynamic Society, Chapter 6.

Musselman and Hughes, Introduction to Modern Business, Chapter 8.

Shubin, Business Management, Chapters 19, 20.

Specthrie, Basic Cost Accounting.

Wheeler, Business: An Introductory Analysis, Chapters 10, 11, 16.

Monday Seminar Notes:

Speaker's name: ______________________________

Position: ______________________________

Company or organization: ______________________________

Topic: ______________________________

Summary and Notes:

Monday Film Notes:

Title: ______________________________

Producing Company: ______________________________

Distributor: ______________________________

Title: ______________________________

Producing Company: ______________________________

Distributor: ______________________________

DIRECTED OBSERVATION SECTION

FINANCIAL CONTROL

Directions: Under each outline statement make proper notes regarding your observations, sources of information, and other similar data. The questions below the statements are for guiding thinking but do not limit your observations to the questions.

I. INTRODUCTION

A. Organization.
   1. How is the general financial function organized?
   2. What is the line of authority and responsibility within this organization?

B. Functions.
   1. What are the general functions of the various divisions, departments or groups within the organization?
   2. How are these functions coordinated?

II. CONTROLLERSHIP

A. Introduction.

1. What is meant by controllership?
2. What general types of work is a controller responsible for?

B. General accounting.

1. What is general accounting?
2. What are the functions of the general accounting service?

C. Forecasting.

1. Introduction
   a. What is forecasting?
   b. What are the purposes of forecasting?
   c. What various departments within the company use forecasts?
   d. Why are forecasts important?

2. Operation
   a. How is forecasting for the next year done?
   b. What factors are considered?
   c. What reviews of the forecast are made?
   d. How, why, and how often is a forecast up-dated?

D. Manufacturing cost control and accounting.
  1. Introduction
    a. What are the functions of the cost control group?

  2. Cost analysis
    a. How is the cost of the product determined?
    b. What cost system is used and why was it selected?
    c. How are the variations in cost communicated to management?

3. Types of cost
   a. Define direct and indirect costs?

4. Cost control
   a. Cost centers
      (1) What is a cost center or responsibility accounting?
      (2) Why is it important to establish these for cost control?

b. Material costs
   (1) How are the costs of materials determined and controlled? (bill of materials, standard costs, etc.)
   (2) What are examples of direct and indirect material costs?

c. Labor costs
   (1) How are costs of labor determined and controlled?
   (2) What are examples of direct and indirect labor costs?

- d. Plant overhead
  - (1) What is plant overhead?
  - (2) How are overhead costs determined and controlled?

E. Accounting for other costs.

- 1. Engineering costs
  - a. What types of costs are classified as engineering costs?
  - b. How are engineering costs determined and controlled?

2. Marketing costs
    a. What types of costs are classified as marketing costs?
    b. How are marketing costs determined and controlled?

F. Electronic Data Processing.
    1. What types of activities are performed by EDP?
    2. Why are these done by EDP?

G. Internal audit.
   1. What is internal audit?
   2. Why is it important?
   3. How is internal audit performed and up-dated?

III. TREASURY

A. Introduction.
   1. What is meant by the treasury function of the company?
   2. What general types of work is a treasurer responsible for?

B. Credit and collection.
   1. What are the functions of the credit and collections group?
   2. How are these functions performed?

C. Cash flow.
   1. What is meant by cash flow?
   2. What is the purpose of cash flow?
   3. How is the activity accomplished?
   4. Why is it important?

IV. ACCOUNTING FOR SALES DOLLAR

A. How many cents of each sales dollar is spent for each major category of expense?

B. Of the amount which is profit, how much is spent for income taxes, dividends, etc.?

C. Draw a pie graph showing above information.

V. PURCHASING

A. Introduction.
   1. How is the purchasing group organized?
   2. What are the lines of authority and responsibility?
   3. What information is communicated to management through reports? (adequacy of suppliers, price trends, etc.)

B. Placing orders.

1. What authorizes the purchasing department to initiate and enter into contracts for:
   - a. production material
   - b. capital expenditures
   - c. supplies
   - d. services?

C. Procedure.

1. Trace the procedure from determining the need for an item to fulfilling that need.
2. Is the procedure the same for all types and value of purchases? If not, how do they differ?

D. Methods used.
  1. Obtaining prices
    a. How are prices of items obtained (bids, requisitions, etc.)?
    b. Which methods are used for various types and value of items?

VI. INVENTORY CONTROL

A. Introduction.
  1. What types of inventories are present in the company?
  2. At what levels are these inventories held?
  3. How were these levels set?
  4. What factors are considered in setting inventory levels?
  5. Who is responsible for:
    a. level of inventories?
    b. inventory records?

B. Physical inventories.
   1. How often are inventories taken?
   2. How are discrepancies in inventory handled?
   3. How is obsolescence controlled?
   4. How are inventories valued?

REVIEW AND APPLICATION

ANALYSIS OF ANNUAL REPORTS

Use an annual report from the company to which you are assigned, if available, and one other company report.

	Company A	Company B
Name of the company officers:		
Chairman of the Board		
President		
Exec. Vice President		
Treasurer		
Secretary		
Location of Home Office		
Location of Major Plants		
Other information gained from the annual report (new products introduced, expansion plans, mergers, etc.)		

Ten year comparisons

Diagram or chart the following comparisons:

1. Net sales
2. Disposition of earnings
    - a. Cash dividends
    - b. Income retained
3. Capitalization
    - a. Long term debt
    - b. Common stock
    - c. Preferred stock
4. Properties

From the review of the information provided in the annual report discuss:

1. Significant factors or events which have had and are having an effect on the company's growth and operation.

2. Discuss reasons which would account for variances in the net sales of the company over the past ten years.

3. From the figures contained in this annual report, would you characterize this company as:

   a. interested in reinvestment of profits to promote rapid growth of enterprise?

   b. interested in paying larger dividends and have a slower rate of growth?

   Defend your choice.

4. Identify recent trends or developments which might have a significant effect on this company's performance.

OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

OCCUPATIONAL INFORMATION

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OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

FINANCIAL STRUCTURE	COMPANY #1 Co. name____________	COMPANY #2 Co. name____________
4 **GENERAL ACCOUNTING** (Services, operation, and duties of the general accounting department)		

COST CONTROL AND ACCOUNTING:

(Analysis of product
cost, methods used,
costs considered,
etc.)

SALES DOLLAR (distribution of sales dollar and distribution of profit dollar; give percentages)		

PURCHASING: (How are needs established, who has authority to purchase materials)		
INVENTORY CONTROL: (How are inventories controlled, at what level are they maintained, etc.)		

APPLICATION SECTION

Complete the following section in terms of the phase of industry being studied during the week.

A. Concept identification:

List as many concepts about industry as possible which you have been able to identify from this week's study which you consider important for a good understanding of this phase of industry.

CONCEPT	FACTS TO BE INCLUDED IN THE DEVELOPMENT OF THE CONCEPT

B. Concept Presentation:

Select one or more concepts identified in Part A and develop a number of suggested activities which would be appropriate for use in developing these concepts in an industrial arts class. The class may be at a level of your choosing. (Identify the level.)

MARKETING

MARKETING

PURPOSES:

To be able to interpret to public school industrial arts students:

1. the sales function of an industrial concern.
2. the basic concepts of product packaging.
3. the fundamentals of distribution of industrial products.
4. the role of industrial advertising.

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Monday Seminar Notes:

Speaker's name: ______________________

Position: ______________________

Company or organization: ______________________

Topic: ______________________

Summary and Notes:

Monday Film Notes:

Title: ______________________________

Producing Company: ______________________________

Distributor: ______________________________

Title: ______________________________

Producing Company: ______________________________

Distributor: ______________________________

DIRECTED OBSERVATION FORM

MARKETING

Directions: Under each outline statement make proper notes regarding your observations, sources of information, and other similar data. The questions below the statements are for guiding thinking but do not limit your observations to the questions.

I. INTRODUCTION

A. Role of marketing.
   1. What is the role of marketing in the company?
   2. Who makes up the marketing team?
   3. Why are these people important to marketing?
   4. What is the trend in the role of marketing within the company?

B. The market.
   1. How is the market for this company defined?
   2. What are the segments of the market?
   3. Why is it important to define the market and identify market segments?

C. Market receiving direct appeal.
   1. Do certain segments receive more direct action than others from the company?
   2. If so, how and why are the segments for direct action identified?

II. ORGANIZATION FOR MARKETING

A. Structure.
   1. How is the marketing function organized?
   2. What are the lines of authority within the organization?
   3. Why is a structure important?

III. FUNCTIONS OF MARKETING

A. Market research.
   1. Functions
      a. What are the functions of market research?
      b. Why are the functions important to the company?

   2. Techniques
      a. What techniques or methods are used in market research?
      b. In what type of situations is each technique or method used?
      c. What types of information are gained from each technique?
      d. To what use is the information put?

B. Advertising
   1. Personnel
      a. What types of personnel are utilized by an advertising group?
      b. Are any of these people outside the company organization? If so, which ones?

   2. Advertising agency (if used)
      a. To what extent is an agency used?
      b. What services does the agency provide?
      c. Why is an agency used and how was it identified?

   3. Types of advertising
      a. What types of advertising are used by the company?
      b. What are the advantages of each type to the company?

4. Advertising media
   a. What advertising media are used by the company?
   b. How and why were they selected?
   c. What are the advantages and disadvantages of the different media?

5. Evaluating effectiveness
   a. Is advertising evaluated for effectiveness?
   b. How and why is effectiveness evaluated?

6. Collect samples of advertising used by the company you are studying and discuss the type and the impact the company would like it to have on the buyer.

C. Sales promotion.
   1. How does sales promotion differ from advertising?
   2. What types of sales promotion are used?
   3. How and why were they selected?
   4. Is the effectiveness of sales promotion evaluated? If so, how?

D. Sales - channels and functions.
   1. Selection of distribution or sales channels
      a. What channels of distribution are used?
      b. Why were these channels chosen?
      c. What training is provided by the company for the various types of sales representatives?
      d. What services are provided by the company to the various types of sales representatives?

2. Distribution channels (answer those that apply)
   a. Distributor
      (1) What is a distributor?
      (2) What is his relationship to the company?
      (3) What are the advantages and disadvantages of using distributors?
      (4) How and by whom are distributors selected?

   b. Wholesaler
      (1) What is a wholesaler?
      (2) What is his relationship to the company?
      (3) What are the advantages and disadvantages of using a wholesaler?
      (4) How and by whom are wholesalers selected?

c. Manufacturer's representatives
   1. What is a manufacturer's representative?
   2. What is his relationship to the company?
   3. What are the advantages and disadvantages of using them?
   4. How and by whom are they selected?

d. Direct (company) salesmen
   1. What is a company salesman?
   2. What are the advantages and disadvantages of using company salesmen?
   3. How and by whom are salesmen selected?
   4. What is the relationship between company salesmen and other types of sales organizations?

e. Retail
   - (1) What is a retailer?
   - (2) What is his relationship to the company?
   - (3) How does he receive the company's products for sale?
   - (4) What controls does the company exercise over the retailer?
   - (5) Why, if used, are they important?

f. Export sales
   - (1) How are export sales received?
   - (2) Why is this method used?
   - (3) Why are export sales important?

g. Other methods
   - (1) What other methods are used to distribute products to customers?
   - (2) How do they function?
   - (3) Why are they used?

E. Packaging.
   1. Functions
      a. What are the functions of a package?
      b. What criteria are considered under each function?

   2. Design of packages
      a. Who (department or group) designs packages?
      b. What factors are taken into consideration during designing?
      c. Who has final say on package design?

   3. Trends
      a. What are the trends in packaging of (1) industrial goods and (2) consumer goods?

F. Physical distribution.
   1. Storage
      a. How are the finished goods stored?
      b. Why was this method chosen?
      c. What records are kept to provide a knowledge of inventory?

   2. Transportation
      a. How are finished goods transported to market?
      b. Who (title) is responsible for deciding on the method of transportation?
      c. What factors are considered in making the decision?

G. Sales forecasting.

1. Who (title) makes sales forecasts?
2. What information is used in forecasting sales?
3. How is the information obtained?
4. To what use is the forecast put?
5. How often and why is the forecast revised?

H. Pricing.
1. Who (departments) is responsible for establishing product prices?
2. What factors influence the price?
3. Does the price vary and why?

I. Customer service.
1. What types of customer services are provided by the company?
2. Why are these important?
3. What are the trends in customer service?
4. Which departments in the company are active in customer service?

IV. ADDITIONAL OBSERVATIONS:

Discuss observations which you made this week which you have not listed during previous pages.

REVIEW AND APPLICATION

OCCUPATIONAL INFORMATION

OCCUPATION TITLE	APPROX. SALARY RANGE (if available)	GENERAL DUTIES	EDUCATIONAL AND EXPERIENCE REQUIREMENTS

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	COMPANY #1 Co. name__________	COMPANY #2 Co. name__________
MARKET: (Who or what type company constitutes the major markets)		

PACKAGING:

(Primary purpose of the package: sales appear, contain goods, who design package, method of packaging, etc.)

DISTRIBUTION: (Method of distribution from plant to consumer)		
SALES REPRESENTATIVES: (Types used, why used, etc.)		

ADVERTISING: (Types used and why? Media used)		

APPLICATION SECTION

Complete the following section in terms of the phase of industry being studied during the week.

A. Concept identification:

List as many concepts about industry as possible which you have been able to identify from this week's study which you consider important for a good understanding of this phase of industry.

CONCEPT	FACTS TO BE INCLUDED IN THE DEVELOPMENT OF THE CONCEPT

B. Concept Presentation:

Select one or more concepts identified in Part A and develop a number of suggested activities which would be appropriate for use in developing these concepts in an industrial arts class. The class may be at a level of your choosing. (Identify the level.)

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GLOSSARY OF INDUSTRIAL TERMS

Advanced Development: Demonstrating working principles or systems of principles of prospective products or processes by means of theoretical or tangible operating models.

Advertising: The non-personal presentation and promotion of ideas, products or services by a paid sponsor.

Applied Research: Utilizing the results of basic research to achieve specified commercial goals.

Basic Pure Research: Exploring nature scientifically and without specific commercial goals.

Budgeting: Preparing schedules of estimated dollar sales and selling costs for a specified period.

Buying: Locating and negotiating with vendors to secure needed items or services of the desired quality, in the desired quantity, at the desired time, at minimum cost. Purchasing goods for resale.

Collective Bargaining: Attaining accord with officially recognized and legally established employee organizations in the manner best meeting the interests of the company and its employees.

Communications: Providing the means and climate for developing ideas and exchanging information throughout the company.

Cost Accounting: Recording costs incurred in relation to work performed.

Credit and Collections: Controlling exposure to bad debt losses and collecting overdue payments.

Development: Applying scientific and technologic knowledge to create new or modify existing products and processes so they will best achieve stated performance and economic requirements.

Employee Services: Maintaining the general welfare of employees on the job and assisting them with problems related to their security and personal well-being.

Employment: Insuring that all positions are filled by competent personnel at reasonable cost.

Facilities Design and Specification: Specifying or approving all factory and office equipment and buildings and directing their proper installation.

Final Assembly: Joining two or more parts or sub assemblies to form a complete product.

Finance: Securing adequate operating funds at minimum cost; investing surplus funds to best advantage; and maintaining a good pecuniary reputation for the company.

Finance and Control: Planning, directing, and measuring the results of company monetary operations.

Financial Planning: Predicting the need for obtaining or investing funds and planning the most advantageous methods.

General Accounting: Maintaining formal records of what the company owns, owes, is owed, has earned, and is worth.

Indoctrination: Seeing that new employees receive the training and information required to perform their duties effectively.

Industrial Engineering: Planning the utilization of men, facilities, tools, jigs, and fixtures to attain the desired quantity and quality of output at minimum cost.

Industrial Relations: Insuring that the working relationships between management and employees and the job satisfaction of and work opportunities for the company's personnel are developed and maintained in the best interests of the company and its employees.

Inspection and Test: Conducting quality control measurements and analyses; rejecting products, recommending the halting of sub-standard production processes; and notifying those affected.

Internal Auditing: Assuring the accuracy of accounting records and adherence to standard practices.

Maintenance: Installing and maintaining buildings, facilities, and utility services in safe operating condition and occasionally constructing buildings and facilities.

Manufacturing: Making products for sale by changing the shape, composition, or combination of materials, parts, or sub assemblies.

Market Analysis: Measuring and evaluating the extent of the market and determining its characteristics.

Marketing: Directing and encouraging the flow of goods from producer to consumer or user.

Marketing Research: Gathering, recording, and analyzing facts relating to the transfer and sale of products.

Merit Ratings: Appraising objectively the performance of each employee in relation to the duties and responsibilities of his assigned position.

Methods Study: Establishing the best methods of performing necessary direct or indirect production tasks excepting materials handling.

New Process Development and Process Improvement: Designing new and improved manufacturing systems, operations and facilities so they best achieve stated technical performance requirements.

New Product Development and Product Improvement: Designing new and improved products so they best achieve stated performance requirements.

Operation Scheduling: Specifying the most practicable combination of where and when to perform every activity required to complete an order.

Packaging: Developing containers or wrappings for products sold as packaged products.

Part Manufacture: Creating basic units of a complete product.

Personnel: Developing and administering policies and programs for providing an effective organization structure, qualified employees, equitable treatment, advancement opportunities, job satisfaction, and adequate job security.

Planning and Budgeting: Participating in the planning and control of operations by planning and measuring revenues, costs and profits; organizing financial and accounting information for use in making decisions, communicating decisions, and measuring results against plans.

Plant Engineering: Specifying or approving, installing, maintaining, and occasionally constructing the buildings, utility services, and facilities required to produce the products.

Plant Layout: Establishing the best physical arrangement of facilities, utilities, and work areas.

Pricing: Determining the price at and the terms under which to make sales.

Product Design: Specifying by means of drawings, instructions, standard practices, and otherwise, the shape, composition, performance, and quality characteristics required of products.

Product Engineering: Specifying, interpreting, and modifying for manufacturing and marketing purposes the nature, performance, and quality characteristics of products.

Product Service: Assuring customer satisfaction and reasonable product performance.

Production: Developing the most economical methods and plans for manufacturing authorized products; co-ordinating the required manpower; securing and co-ordinating materials, facilities, tools, and utilities; producing products, and consigning them to the marketing activity or the customer.

Production Planning and Control: Preparing, issuing and encouraging compliance with schedules of the men, materials, facilities, instructions, and all additional items required to complete manufacturing orders so they will be available when and where required.

Purchasing: Securing when required and at minimum cost the quantity and quality of materials, supplies, services, and equipment needed to operate the company.

Quality Control: Establishing acceptable limits of variation in the attributes of a product and reporting the status of maintaining the product in respect to those limits.

Recruitment: Searching for and attracting applicants qualified to fill vacant positions.

Research: Exploring nature scientifically for the purpose of increasing knowledge of the universe.

Research and Development: Applying the processes, operations, and techniques of science and technology to create products, processes, and services which may benefit an enterprise.

Safety: Developing and maintaining adequate facilities and procedures for preventing on-the-job accidents.

Sales Planning: Planning for marketing the right products at the right place, at the right time, in the right quantities, and at the right price.

Sales Promotion: Supplementing and co-ordinating personal selling and advertising for greater effectiveness.

Salvage: Determining the most economical methods of using or disposing of rejected or obsolete items and scrap and preparing them for those uses or dispositions.

Service and Repair: Reworking worn or improperly manufactured products, subassemblies, or parts to meet established quality specifications.

Shipping: Delivering products to customers.

Subassembly: Joining two or more parts to form a portion of a complete product.

Tax Management: Planning and managing the company's tax liabilities.

Tool, Jig, Fixture, and Gage Procurement: Supplying when needed all facilities, tools, and gages required to complete an order.

Tool Management: A technique or procedure, usually requiring special training or skill for effective application.

Training: Developing existing personnel to their full potential for attaining established performance standards.

Wage and Salary Administration: Insuring that employees are fairly and equitably compensated.

Warehousing: Maintaining and handling stores of merchandise for shipment to customers.

Work Measurement: Establishing time standards for performing necessary direct and indirect production tasks.

APPENDIX F

GUIDE FOR INDUSTRIAL PERSONNEL

DIRECTED FIELD STUDY IN INDUSTRY

A Guide

FOR INDUSTRIAL PERSONNEL

DIVISION OF INDUSTRIAL ARTS AND TECHNOLOGY
STATE UNIVERSITY COLLEGE
OSWEGO, NEW YORK

INTRODUCTION

The Directed Field Study in Industry program was first tried as a pilot program in the fall of 1964. During the next two years, 1965-66, the program was conducted under a research grant from the United States Office of Education to refine and develop further the materials and procedures essential to its operation as a part of the undergraduate preparation of industrial arts teachers.

The program is intended to give those students who have been selected for assignment an opportunity to study and observe industry at first hand in order to enrich their background of understanding. This observation and study period should enable these future industrial arts teachers to acquire those concepts and understandings about how industry is organized and operates so they may interpret this important element of our society to their students in the industrial arts laboratory.

This brief guide is intended as a general orientation to the program in order that the personnel who will be working with these students from time to time will be able to assist the students in obtaining the essential ideas and information which will be most helpful to them as future teachers.

The College wishes to acknowledge the contribution which has been made by the many people in business and industry who have assisted in developing this program and for the enthusiastic support and cooperation of the Syracuse Manufacturers' Association.

We present this guide in the interest of a better understanding of our program and welcome your comments and suggestions for the improvement of this guide or the program at any time.

3/15/67

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I THE NEED FOR A DIRECTED FIELD STUDY

This program is designed as a professional laboratory experience for junior and senior college students who are preparing to become public school industrial arts teachers.

These college students, in general, have had very little, if any, exposure or direct experience with the complex organization and processes of many contemporary industries. Industrial arts teachers who will be responsible for teaching their students to understand the many complex phases of our industrial technology need a direct exposure to industry for a period of time and at a level which will permit them to acquire insights for interpreting effectively the social, economic, technical and psychological concepts of American industry to their students. Such experiences are not a prerequisite for admission into the professional industrial arts teacher education curriculum. College courses, in general, cannot provide the integrated interpretation of the concepts necessary for a sound understanding of current industrial organization and operation. It is the purpose of this program to provide this integrative experience.

II PURPOSES OF THE PROGRAM

It is hoped the following purposes will be achieved with those students selected for this program:

1. To provide future industrial arts teachers with a broad understanding of the function and organization of the major common elements of industry for interpretation in their classes.
2. To develop a fundamental understanding of the history and development of industry and labor and of the relationship and responsibilities of labor and management in our industrial society.
3. To develop an understanding of the principles of industrial sociology, industrial psychology, and industrial economics for future industrial arts teachers.
4. To give future industrial arts teachers an opportunity to identify the important concepts about American industry which need to be

taught at the public school level and to prepare curriculum resources for developing these concepts with public school students.

III STUDENTS ENROLLED IN THE PROGRAM

Students who will participate in this program are in the last half of their junior or the first half of their senior year, during the semester when they are scheduled for off-campus student teaching. Students selected will have satisfactorily completed one nine-week experience of student teaching and will be selected from those who have made application for assignment to this program. Insofar as possible, they will be assigned to an industry which is related to their area of technical specialization in college.

IV WHAT THE STUDENT IS PREPARING FOR

The student is preparing to become an industrial arts teacher in the public schools and will be teaching students at the junior and senior high school level. In carrying out his teaching responsibility, he will be attempting to interpret a broad understanding of how industry is organized and something about the various processes, occupations, and materials which are used in modern industry.

V WHAT INDUSTRIAL ARTS IS

Industrial arts as a subject in the school curriculum provides a broad orientation to the industrial aspects of our culture. It is designed to prepare the learner to understand and participate in a democratic industrial society.

Junior and senior high school students enrolled in industrial arts are involved directly in meaningful activities in a technical shop or laboratory where they work on individual and group problems and projects. Students learn about the occupations of industry, types of activities engaged in by workers, the preparation required for certain types of employment, and future opportunities available. They also learn facts, principles and procedures about industrial tools, materials, processes, machines and design.

Practical experiences are provided with tools and materials representing a wide range of industries such as ceramics, metals, paper, plastics, textiles, and wood. Other activities may include a study of electricity and electronics, motors, engines, structures, etc. of concern to people at home, in industry, on the farm, and in leisure time activities.

Industrial arts is organized to provide stimulating problem solving activities that relate to the functions of management, labor, research, engineering, production, and marketing, as they are performed in industry.

VI THE OBJECTIVES OF INDUSTRIAL ARTS

The student you are working with will be attempting to accomplish the following objectives with his students as he teaches industrial arts:

1. To develop in each student an insight and understanding of industry and its place in our culture.
2. To discover and develop talents of students in the technical fields and applied sciences.
3. To develop technical problem solving skills related to materials and processes.
4. To develop in each student a measure of skill in the use of common tools and machines.

VII WHY THE STUDENT IS STUDYING INDUSTRY

From the foregoing statements it may be seen that, in order for this student to teach industrial arts properly, he needs to have a first hand exposure to the many facets of industry and to be able to understand how each of the various departments such as industrial relations, engineering, production, finance, and marketing function. This general overall knowledge will better enable him to plan realistic activities for his students and to present information which will be interpretive of the way industry operates.

VIII TYPES OF PARTICIPATING INDUSTRIES

To achieve maximum learning benefit, effort will be made to have as many types, categories, and sizes of industries represented during any nine-week quarter as possible. It is hoped that representation from as many of the following classifications as possible can be achieved. This list is not intended to be all inclusive.

A. Manufacturing industries
   1. Metal fabrication, production
   2. Wood fabrication
   3. Electronic
   4. Graphic arts and printing
   5. Other manufacturing, production

B. Transportation industries
   1. Land transportation
   2. Marine transportation
   3. Aviation

C. Communications industries
   1. Newspaper and other publications
   2. Telephone, telegraph, etc.
   3. Radio, television broadcasting

D. Construction industries
   1. Heavy construction - buildings and highways
   2. Architectural and Architectural engineering

E. Primary refining

   1. Metal refining

   2. Non-metal refining

F. Service

   1. Utilities

   2. Repair centers

G. Food

   1. Processing

   2. Distribution

IX ORGANIZATION OF THE PROGRAM

The nine-week program is divided into three major phases as outlined below:

PHASE I Introductory Seminar - On college campus

The first week is devoted to a study of the following topics:

A. History of Industry and Labor:

An overview of the origins and development of industry and labor organizations in America from colonial times to present.

B. Industrial Psychology:

An introduction to the effects of industry on the lives of individuals.

C. Industrial Sociology:

An introduction to the effects of industry on a community and of the community on industry.

D. Industrial Economics:

An overview of economic terms and principles as they relate to the industrial enterprises.

PHASE II Observation and Study in Industry

During the succeeding six weeks, the major topics as listed below are studied. One topic is studied each week as outlined with the aid of a field manual which each student owns.

A. Industrial Relations:

1. Employment
2. Salary administration
3. Safety
4. Labor relations
5. Employee training-retraining
6. Promotions, transfers, etc.
7. Termination of employment
8. Employee welfare
9. Communications

B. Engineering in industry:

1. Research (Pure & Applied)
2. Development
   a. Process
   b. Product
3. Product testing
4. Plant engineering

C. Finance:

1. General Accounting
   a. Budget
   b. Invoicing
   c. Billing
   d. Data processing
   e. Payroll
2. Cost Accounting
   a. Direct and Indirect costs
   b. Profit determination
   c. Inventory control
   d. Pricing
3. Purchasing
4. Comptrollership

D. Manufacturing-Production:

1. Production-forecasting and planning
2. Material handling
3. Time and motion study
4. Work standards
5. Manufacturing engineering
   a. Production-scheduling
   b. Quality control

E. Production-Labor (Responsibility-Organization):

1. Types of workers
2. Training needed and given
3. Job qualifications
4. Job descriptions
5. Work load determination
6. Worker responsibilities
7. Management-worker communications
8. Union study-types, organization, benefits

F. Marketing:

1. Sales
2. Advertising

3. Packaging
4. Product Analysis
5. Consumer research
6. Sales promotions
7. Pricing
8. Distribution system

PHASE III Culmination Seminar

During the eighth and ninth week, the students will be on the campus to refine and review concepts and develop instructional materials for eventual use in teaching.

X COLLEGE AND INDUSTRY RESPONSIBILITY

A. College - One staff member assigned to coordinate program

Staff assigned to operate program with following duties:

1. Make initial contacts with industry
2. Organize seminars
3. Conduct on-campus and weekly seminar periods
4. Conduct visitations and supervise students in industry
5. Review and evaluate student reports
6. Prepare student evaluations
7. Review and edit instruction materials developed
8. Prepare and administer pre and post-tests
9. Work with advisory committee in evaluation and refinement of program

B. Industry -

1. Provide facilities necessary for student observation and study
2. Designate person to coordinate student assignment within industry
3. Make available reasonable amount of time of key employees in each major phase of study with whom the student will work
4. Provide resource people for weekly seminar sessions when possible
5. When available, occasionally provide meeting facilities for Monday seminars

6. Submit a final evaluation report on student(s) assigned to the industry on a form to be provided by the college. This report to be completed by the contact person.

XI THE STUDENT'S RESPONSIBILITY

1. The student assigned to your industry is expected to report regularly each day at the regular day shift time to the person he is scheduled to work with in gathering the information as outlined in the field manual.
2. Students are expected to direct their own activities to make the most profitable use of their time in observation, conferences where scheduled, and in writing their reports.
3. When time permits, the students may return to departments and to individuals to whom they have previously been assigned to gather additional information and for further observation.
4. Any time the student will not be able to report as scheduled, he is expected to contact the plant to notify his contact person that he will be absent.

XII SUGGESTIONS FOR WORKING WITH THE COLLEGE STUDENT

The following suggestions are provided to assist you in guiding and planning the work of the student in your plant in order that his experience will be most meaningful and profitable.

1. Try to provide a short conducted tour of the plant on the first day so the student will gain an over-all picture before being assigned to study the various departments in depth.
2. Plan to have the student introduced to several of the key personnel he will need to know during his stay with you.
3. The student should be given a designated desk or work area where he may keep his books and papers and where he may occasionally work on his

written reports.

4. It will help to distribute the various sections of the student field manual to the personnel to whom the student will be reporting in the various departments in order for them to know the type of information the student is expected to obtain in that department.
5. A definite schedule of departments and personnel should be provided so that all concerned will know when and where the student is being assigned in the plant. (See an example of schedule attached.)
6. Whenever the student has completed his observation and information for a given department before the allotted time is used up, he should be encouraged to return to one of the other areas studied for additional observation and information.
7. If possible, a notice might be placed on plant bulletin boards or in the plant newspaper introducing the student and explaining why he is in the plant.
8. The college requests that any unexplained absences or tardiness in reporting on time by the student be reported to the college at once.

XIII STUDENT REFERENCES AND MANUALS

The following materials will be used by the students and staff in conducting this program:

TEXT: Amrine, H.; Ritchey, John; Hulley, O.; Manufacturing Organization and Management, Englewood Cliffs, N.J., Prentice-Hall, 1966.

Student Directed Field Study Manual

Resource File of Selected Bulletins

SAMPLE SCHEDULE

(To be distributed to personnel in the plant)

To Participating Supervisors:-

Your Company has agreed to cooperate again with the State University College at Oswego, New York, in offering a field experience to one college student who will, upon graduation, teach Industrial Arts.

The student assigned to us is ______________________________.
He will be with us Tuesday, Wednesday and Thursday of each week starting ______________________ thru __________________.

The main objective of this program is to prepare future Industrial Arts teachers to interpret the broad functions of industry. While visiting us for 6 weeks he will observe the operations of many departments.

A suggested outline and schedule is attached. You may find it helpful to discuss functions beyond the scope of this outline. Also attached are copies of a few questions the student is expected to ask.

It isn't necessary for you to personally spend all your time with him. However, we would like to have you arrange for his orientation in your department. He will be considered an observer with an opportunity to ask questions. You may assign him to various others in your department.

If any questions or problems arise, please contact me.

Thanks for your assistance.

W. A. George
Personnel Director

WAG/mhs
Encls.

SUGGESTED FIELD EXPERIENCE OUTLINE

	INDUSTRIAL RELATIONS:	STAFF
Nov. 16	Corporate Organization	George
	Personnel "	"
	Employment Procedure	Allen
Nov. 17	Salary and Wage Structure	George
	Merit and Promotion	"
	Insurance and Pension	"
Nov. 18	Safety	L.Brown
	Recreation Program	M. Oot
	Social Activities	"
	ENGINEERING:	
Nov. 30	Research (Observe Ceramic Lab Operations)	Dr.Jones
Dec. 1	Product Design	Dr.Morton
	Modeling (Observe Ashley)	"
	Artist (Observe Wright)	"
Dec. 2	(A.M.) Process Design and Drafting	Ashley
	(P.M.) Plant Engineering	Cook
	ACCOUNTING:	
Dec. 7	Accounting Dept. Organization	White
	Accounting Function	"
Dec. 8	Cost Control	Bucks
	Cost Analysis	"
Dec. 9	Purchasing	Buyers
	PRODUCTION:	
Dec. 14	Manufacturing Organization	C.Rounds
	Material Handling	"
	Quality Standards	"
	Production Procedures	"

Dec. 15	(A.M.)	Production Control	Morris
	(P.M.)	Quality Control and Standards	Hayes
Dec. 16		Time and Motion	Cook

LABOR:

Jan. 4		Non-union System	George
Jan. 5	(A.M.)	Meet with Shop Steward	Able
	(P.M.)	Workers' Role (Observe) (Making and Selecting Ware) (Repairing Ware) (Plant Tour)	"
Jan. 6	(Thursday)	Student attend Labor Seminar Out of Plant	

SALES:

Jan. 11	Packing and Shipping	Morris
	Storage and Transportation	"
Jan. 12	Sales Organization	Storm
Jan. 13	Advertising	Thomas

APPENDIX G

TABULATION OF INDUSTRIAL CONCEPTS

INDUSTRIAL RELATIONS CONCEPTS

Industrial Organization	1	2	3	4	Tot.
1. When a company organizes according to a set structure, the operations within the company will be carried out in an efficient, organized manner. When this organization is known and understood by all, maximum efficiency will result.	6	5	3	5	19
2. Long-range planning and development is necessary for future growth and success of any company. This is the responsibility of highly skilled and educated management.	2	1			3
3. The organization of a company may be either very simple or quite complex in its structure.	1	1			2
4. Workers should understand the structure of the company so they will know to whom they are responsible.		2	1		3
5. When a company is large and requires a great amount of capital to operate, it often finds it desirable to incorporate.		2			2
6. As the size of a corporation grows, it often becomes necessary for it to deviate from the original line organization.		1	2		3
7. Privately owned companies have less distinct organization than do corporate forms of business.		1			1
8. A major function of the industrial relations department is to serve the corporation by providing an effective organization structure.			1		1
9. Top management positions require great skill and responsibility in the area of policy and decision making.			1	1	2
10. A corporation is an artificial being, existing only in the eyes of the law.			1		1
11. Companies which are divisions of larger corporations generally are regulated and receive guidance in respect to major policies from the parent company.			1		1
12. Industries are organized and function for the purpose of making a profit for the stockholders.				6	6

INDUSTRIAL RELATIONS CONCEPTS

Employment	1	2	3	4	Tot.
1. Individuals who apply for jobs according to prescribed and established procedures are more likely to be successful in acquiring the job than those who do not follow said procedures.	6	7	4	4	21
2. Individuals that display well-developed qualities of self-confidence are more effective in convincing others.	2	2		2	6
3. Individuals who apply for specific jobs should be aware of the education and skill requirements of the job before applying.	7	4	1	1	13
4. Individual employee productive contribution must exceed the direct and indirect remunerations he receives.	2	1			3
5. Workers attitude, cooperation, ability to accept and adapt to change, willingness and ability to work with others are key ingredients for occupational success.	2	2	1	2	7
6. Job rating consists of analyzing the work to be done with respect to the degree of skill, effort, responsibility, and education required.	1	1			2
7. Job promotion is based on many factors including knowledge, ability, past performance, ability to work with others, initiative, etc.	4	1	2	3	10
8. Positions of employment may be filled with persons already employed within the company by a process called bidding.		2	2		4
9. Merit rating consists of evaluating the worker - not the job.		1			1
10. When the supply of labor is high, the employers are more selective in their hiring practices. When there is a labor shortage, they are less selective.		1	1	5	7
11. When applying for a job, an individual should have some idea as to what he would like to do, what he is qualified for and what types of jobs are available.		1	1	1	3
12. Generally, the more education an individual has the better job he will be able to get and his earning power will be increased.		1	2	1	4
13. When a production line employee fails to show up for work or is late, total production is hampered.		1			1

INDUSTRIAL RELATIONS CONCEPTS

Employment	1	2	3	4	Tot.
14. When effective employment and placement procedures are used, the result is a lower turnover of employees.			1	5	5
15. When an individual applies for a specific job, his previous experience and performance record will be a very important factor in the final decision.			7	1	8
16. Pre-employment testing provides guidelines for good hiring and proper placement practices.			1	1	2
17. Recognizing that companies have "personalities" an effective employment procedure would attempt to select employees that have similar personalities.			1		1
18. Generally prospective employees must complete an application, take specific tests and have an interview as part of the employment procedure.			3	3	6
19. The more responsible and complex the position, the more time and effort is put into the selection of the employee.				1	1

INDUSTRIAL RELATIONS CONCEPTS

Employee Development and Welfare	1	2	3	4	Tot.
1. Employee development and general welfare is the interest of the employer.	1	1	3	2	7
2. Reward and/or recognition for high caliber work is desirable to both employee and employer.	3	1	3		7
3. Employee moral is important to industry.	5	2	3	2	12
4. Fringe benefits to employees are generally highly beneficial to them. The actual value should not be overlooked by the employer or employee when considering the actual worth and costs involved.	3	7	8	3	21
5. The salary structure of a company should take into account job value, area scale, and the labor market.		2	1		3
6. Work breaks often increase the workers' production.		2			2
7. Worker suggestion programs are useful to industry and should result in recognition for the workers ideas.		4	1		5
8. Indirect labor costs or fringe benefits cut into the profits of a corporation.			1		1
9. Training and orientation of new employees are both necessary and expensive.			2		2
10. Employee attitudes play a very large role in the success of any company.			1		1
11. Relocation assistance is a necessity when companies transfer employees from area to area.			1		1
12. Profit sharings, especially in the management level generally encourages more conscientious work and personal interest in the company.			1		1
13. Many industrial organizations maintain a medical center with a professional staff and appropriate facilities.			1		1
14. Some benefits are required by law.			1	1	2

INDUSTRIAL RELATIONS CONCEPTS

Communications	1	2	3	4	Tot.
1. An effective communications program is essential to both employee and employer.	3	6	5	7	21
2. Good communication results in better production.		2	3	3	8
3. Efficient communication in the production process can reduce the total unit costs of a product.			1	1	2
4. Companies have an image or personality in the eyes of the community. A company often tries to control this "attitude" by effective communications.			1	4	5
5. Generally, bulletin boards are used for inter-plant communications.			1		1
6. When a good public relations program exists, people communicate, understand, create interests, and become involved with ideas, plans and methods more willingly.				4	4

INDUSTRIAL RELATIONS CONCEPTS

Safety	1	2	3	4	Tot.
1. A good health and safety program is important to both employee and employer.	11	6	6	9	32
2. Workers should be aware of the safety policies of their company.		2			2
3. When safety rules are observed and enforced from the "Top" down, accidents will greatly diminish.		5	2	1	8
4. Accidents are costly to both the individual and the industry.			1	2	3
5. A good safety program must be thoughtfully planned and implemented.			2	2	4

INDUSTRIAL RELATIONS CONCEPTS

Wage & Salary Administration		1	2	3	4	Tot.
1.	A prime responsibility of the industrial relations department is to provide and maintain a realistic wage and salary scale for all employees.			2	1	3
2.	The level of responsibility usually is reflected in the compensation and generally the greater the responsibility, the higher the compensation.			1		1
3.	As an employee becomes of more value to a company, through experience or knowledge, he increases his chances for promotion and greater compensation.			2		2
4.	Generally, workers on incentive have a higher productive performance.			1	2	3
5.	Wages and salaries are established for a particular job in part on the basis of the level of responsibility, education and training required, and accountability required for filling the position to the optimum.				4	4
6.	Wages and salaries are the two most common way of paying employees.				3	3

5

INDUSTRIAL RELATIONS CONCEPTS

Labor Relations	1	2	3	4	Tot.
1. Labor organizations have been helpful in improving general employment conditions by negotiation with employers -- where the end result in many cases has been a mutual agreement.	2	1	2	1	6
2. A good working relationship must exist between labor and management.	3	3	1	1	8
3. The major objective of unions is to be able to bargain collectively with management on issues of wages and benefits.		3		1	4
4. When management of a non-union company has poor relations with its workers, there is a strong possibility that the personnel will organize. The reverse is also true.		3	1		4
5. Grievances and contract disagreements are referred to the Labor Relations Manager who is generally responsible to the Manager of Industrial Relations.		1	3		4
6. Management and Labor are not as completely opposed as it often is assumed.		1		1	2
7. The contractual agreement between management and labor is the ultimate guide for day-to-day labor relations.				1	1

ENGINEERING CONCEPTS

Development	1	2	3	4	Tot.
1. Patents, copyrights and trademarks are used to protect consumers and producers	1			5	6
2. As the technology of processing advances it becomes necessary for engineers to specialize.	3				3
3. Product and process evaluation are necessary.	3	1	1	1	6
4. When pilot plants or projects are utilized in the development stage there can result in a better designed final product and result in saving of time, labor and money.	3	1	2	7	13
5. Due to the great capital investment in many large projects, the project retirement must be considered and planned before a project is started.	2	1	1		4
6. When a company utilizes industrial research and development to develop new and better products and processes and better ways of producing and using old products, it is better able to compete with others.	5	4	2	1	12
7. New products are generally tested thoroughly before release to the public.		2	3	2	7
8. When a customer has a new product requirement, a company will try to meet that need and develop such a product.		1	5	2	8
9. Process development has to do with any device or combination of devices needed to manufacture products.			1		1
10. While a patent is generally an advantage to a company there are circumstances that may make it a disadvantage.			4		4
11. Product improvement is frequently done to give the manufacturer increased sales and/or higher profit.			3	2	5
12. Patents make available the inventors' ideas to the public, thus this adds to the great body of knowledge in science and technological fields.			1	2	3
13. Product development or improvement may be the result of, or affect of, Local, State, or Federal legislation.			1		1
14. A primary goal of product development is to achieve the best compromise between cost and quality.				1	1
15. Frequently Research, Development and Product Engineering are functions carried on at the "home office" of large corporations. This data is then "handed down" to the various manufacturing units for production.				2	2

ENGINEERING CONCEPTS

Research (Pure and Applied)	1	2	3	4	Tot.
1. The problem solving ability of individuals can be utilized in research.	2				2
2. It is important to determine the worth of any idea through experimentation and research.	2	1		1	4
3. An effective research program (applied) will assist the company in keeping up with competition and produce new products.		7	6	3	16
4. The cost of research and, in many cases, development is an overhead expense to be borne by the company.		1	1	1	3
5. Most companies keep tight security on new ideas and developments to protect their investment.		2	2		4
6. "Contract" or"Job shop" companies seldom do research or development.		1		1	2
7. Many companies may reap the benefits of research done by another company.		1	2		3
8. Research may be either pure or applied and may answer a need of the market.			1	1	2
9. Research and/or development may be contracted-out to a firm that specializes in only this kind of work.			2	2	4

ENGINEERING CONCEPTS

Product Engineering	1	2	3	4	Tot.
1. When standards are established in engineering, unnecessary duplication and repetition will be minimized.	9	2	10	4	25
2. The adoption of world-wide and/or nation-wide standards is important for good production procedures.	2	1	1	1	5
3. The use of well developed drawings which reflect standards and specifications are an important means of communication.	6	1	2	1	10
4. When simple but adequate drafting practices are incorporated, production layout time will be minimal.	2	1			3
5. When future trends and developments are properly analyzed and forecast, better engineering production and products will result.	4	5	2	1	12
6. Before a product can be manufactured, it must be designed and tested so that it will serve its function and meet any required standards.		2	6	2	10
7. Value analysis is an important function in product engineering.		1	5	3	9
8. The customer desires and needs are of prime importance in product engineering.		1	2	3	6
9. When several manufacturers produce the same or similar items, associations are often formed which may have the function of establishing standards for that industry.		1	1		2
10. Competition is often a factor in the redesign of a product.			7	2	9
11. When there is close interplay between all departments concerned in development, design and engineering of a new product, the result will be a better product in less time and cost.			4	4	8
12. When a speciality product is manufactured, the customer usually will write the specifications and frequently supply the drawings.				1	1

ENGINEERING CONCEPTS

Plant Engineering (Instal. & Main't. only)	1	2	3	4	Tot.
1. When long-range planning is utilized by a company it will tend to produce a more coordinated effort by all departments and employees.	3	1	1	1	6
2. The limitations of a plant govern the type and kinds of products which can be produced.	3	1	1		5
3. When maintenance is neglected the cost of production will increase over a period of time.		3	1	1	5
4. An efficient plant is engineered for maximum performance.		1	1	2	4
5. The plant Engineering Department is responsible for continued production by providing and maintaining adequate facilities for all operations of the company.			2	3	5
6. The plant maintenance departmentin addition to the general preventative maintenance procedures, is also responsible for repairs, rebuilding, reconditioning, and replacement generally.			4	3	7
7. When special equipment or machines are to be installed in a plant, considerable preliminary planning must take place before the actual operation starts.				1	1

PRODUCTION CONCEPTS

Manufacturing Engineering	1	2	3	4	Tot.
1. When material is processed in quantity, it reduces machine set-up time.	1	2	1		4
2. Education in modern methods of production is vital to profitable competition.	1	1	1	3	6
3. When making a time study, action must be taken to offset the psychological effect of the time study.	1	1			2
4. When workers establish a uniform pace, more work will be accomplished than when they work at an intermittent pace.	2	1	1		4
5. When time and motion-study studies are properly used, they work to advantage of both workers and management.	4	1	6	6	17
6. In order to produce a quality product, good tooling is necessary.		1	7	2	10
7. The most effective use of material handling equipment will reduce production cost.		3	4	3	10
8. To establish an incentive program that will benefit both the company and the worker, time and motion methods engineers must be used.		5	1	1	7
9. Generally where workers are paid an incentive wage productivity will increase.		2			2
10. Time studies can provide important information in estimating production costs.			2	1	3
11. Work standards determine how fast and/or how hard a worker must perform, therefore these standards are of vital interest to the labor force and are frequently negotiable in contractual terms.				1	1

PRODUCTION CONCEPTS

Quality Control	1	2	3	4	Tot.
1. Quality control is an essential part of production.	2	5	5	3	15
2. When incentive programs are introduced, the quantity of work tends to increase while quality may decrease.	2		1		3
3. Recovery of scrap materials is important to industry and public.	4	2	2		8
4. When unjustifiable requirements on quality control are increased, the end cost also increases.	2	2	2		6
5. Quality control cuts waste to a predetermined minimum.	2	1	1	1	5
6. Flexible specifications will increase production.	1		1		2
7. When sufficient inspection is carried out in production, the total number of rejects will be lowered.	1	2	2		5
8. Concentration of effort on the most important areas of production give the most effective results.	1	1			2
9. The quality control department must check random samples of raw material to finished product to meet specifications by management, government, and standardization agencies.	2	2	1	1	6
10. The quality of work turned out can be no better than the quality and precision of the tools and machines used to process the work.	1	1	1	1	4
11. If used correctly, a quality control organization will augment the overall efficiency and profit of the company.	3	2	2	3	10
12. Quality control, effectively used, will maintain standards and insure acceptable products.		4	5	1	10
13. When workers have professional pride and are most skillful, there is less need for quality control checks.		2	1		3
14. The quality of all component parts will be reflected in the quality of the final product. It is necessary therefore to maintain similar standards and like quality in all components.			1	3	4
15. Effective quality control operations will assist a company in meeting the needs of its customers and in maintaining the status and image of the company and its products.			4	1	5

PRODUCTION CONCEPTS

Production Planning & Control (Rout.,sched.,exped.,etc.)	1	2	3	4	Tot.
1. When a production process is set up, many factors such as materials and equipment available, technical knowledge, standards and requirements need to be evaluated to insure success.	2	1	1	3	7
2. One of the major functions of the production engineering department is to analyze a proposed job, devise a production process and make cost estimates.	2		1	1	4
3. Automation is of utmost importance if an industry is to be competitive.	1				1
4. Excess inventory of production materials reduces profits.	1		1		2
5. When cooperation throughout all the departments is maintained, smooth and efficient production control is evidenced.	1		2	5	8
6. When the production operation and processes are not constant, equipment and personnel must be flexible.	3		1		4
7. When flow charts and/or route sheets are used, the pattern of production can be easily recognized.	1		2	1	4
8. Material handling is done more efficiently by mechanized equipment.	1	2		1	4
9. Material identification is necessary where similar materials are stocked.	1	1			2
10. The production control department is the organizer of all production done on the floor and coordinates the other departments.	2	1	1	1	5
11. The use of proper scheduling procedures is important to insure good production principles.	2	8	6	1	17
12. Determining "lead time" for materials, tools and machines for production is a necessary and important aspect of production planning.		3	4	2	9
13. Effective communications thoughout the entire production sequence is essential in avoiding errors and to insure performance.		3	1	1	5
14. Computers are frequently used in production planning and assembly scheduling.			6	1	7

PRODUCTION CONCEPTS

Production Planning & Control (Rout., sched., exped., etc.)	1	2	3	4	Tot.
15. Production planning consists of planning, routing, scheduling and dispatching materials and processes for optimum production at minimum cost.			9	10	19
16. Production forecasts are determined through a coordinated effort of the sales, scheduling and marketing departments of a company.			4	2	6

PRODUCTION CONCEPTS

Plant Layout & Design		1	2	3	4	Tot.
1.	When the layout and placement of equipment in a shop is carefully considered, more efficiency and reduced costs of production are achieved.	10	11	11	8	40
2.	Where certain features of the plant layout are in effect, efficient and safe use of human resources will result.		1	1		2
3.	Packaging, storage, and inspection, although not necessarily production processes, are important functions to be considered when laying out a plant.				2	2

PRODUCTION CONCEPTS

Manufacturing (Parts Mfgring., Sub-Assemb., Assembly)	1	2	3	4	Tot.
1. The employees in a manufacturing department should be flexible enough to work at several jobs.	3	1			4
2. More effective supervision and management can take place if the supervisor knows and uses the capabilities of the men directly under him.	2				2
3. In the actual manufacturing process frequently parts must be made and sub-assemblies must be performed before the final assembly can begin.		2	1		3
4. An effective assembly operation will keep worker movement to a minimum.			2	2	4

MANUFACTURING - LABOR CONCEPTS

Grievances	1	2	3	4	Tot.
1. A grievance procedure is needed to determine the worth of a grievance and to allow for individual recognition.	5	2	4		11
2. Frequently grievances are over seniority, work jurisdiction, and overtime practices.	1	1	1		3
3. When grievances are settled on the lowest level possible it is best for both sides.		1		3	4
4. The grievance procedure established under union contract will provide for "airing" of all disputes concerning labor and management through recognized channels.		2	9	3	14
5. Most grievances are settled in either the first or second stage.			3	1	4
6. When labor and management are unable to reconcile their differences, a third neutral party is often consulted. When an issue goes to arbitration, both parties are bound by the decision of the arbitrator until the contract expires generally.			6		6

MANUFACTURING - LABOR CONCEPTS

Apprenticeship Programs	1	2	3	4	Tot.
1. Frequently a company will train its own people for specific skills. This is especially true when there is a shortage of labor.		2			2
2. Most all trade or craft unions have apprenticeship programs that they require new members to complete before taking journeyman examinations. Such programs attempt to control union membership to qualified workers.		3	1		4
3. An apprenticeship training program often benefits both labor and management.			1		1
4. Some industries provide time and/or funds for some employees to receive specific training or skills in institutions of higher learning rather than develop internal apprenticeship programs.				1	2

MANUFACTURING - LABOR CONCEPTS

Collective Bargaining	1	2	3	4	Tot.
1. An employee of a non-union shop should be aware of his rights and how to bargain collectively with management for better wages and working conditions.	2	3		1	6
2. When the cost-of-living index changes, it will affect union demands during negotiations.	1				1
3. Although a company has no union, its employees are affected by working conditions in neighboring companies which may or may not be unionized.	3		3		6
4. Employees should be aware of all the opportunities and benefits provided by management.	2				2
5. When unions over-use their privileges and ask for too much, the result could be decline or obsolescence of unionism.	1			3	4
6. Often labor and management regard each other with suspicion.	1	2			3
7. When representatives of the union and management bargain collectively the end result is a contract that will be acceptable to both parties for a specified period of time, usually 2 to 5 years.		3	4	2	9
8. If a company has an open-shop, the non-union workers will generally receive the same benefits as the union membership. Also, middle management and the exempt employees also are favorably affected by union contracts generally.		3	1	1	5
9. During the early stages of the collective bargaining process, unions may make "demands" and management "offers" that they fully recognize will be unacceptable.			1		1
10. Although unions are very powerful, they seldom attempt to "run" the company or suggest major policy changes affecting the operation.			1		1
11. Although affiliated with a national union, local unions usually bargain independently for their own contract.			1		1
12. Unions have several means by which to bring pressure upon employees and these include strikes, pickets, boycotts and lockouts.				1	1

MANUFACTURING - LABOR CONCEPTS

Employees Role and Obligations	1	2	3	4	Tot.
1. An employee has an obligation to himself, management, and society to provide a day's work for a day's pay.	2	3		0	5
2. When a worker feels he is an important part of the operation, is well informed, and that the management is aware of him as an individual, he usually has fewer complaints and finds a greater amount of satisfaction in his job.	3	1			4
3. The employee should be aware of the effects of automation and how it concerns him.	3	1			4
4. Employees should constantly maintain the standards of manufacturing set by the company.	2				2
5. When good industrial psychology practices are used, better worker production is maintained.	1				1

MANUFACTURING - LABOR CONCEPTS

Organized Labor - Need, Value	1	2	3	4	Tot.
1. When workers become organized (union or otherwise) they can maintain strength in voicing their views.	2	2		1	5
2. The role of worker representation tends toward job security.	1	2	3		6
3. Present day American unions are very powerful.	3				3
4. Workers on assembly lines and in mass production are often dependent upon one another.	2				2
5. Employees in a union shop should understand the union organization on local, state, and national levels to be more effective in union-management relations.	7	3	2		12
6. A union organization frequently crosses occupational lines to provide representation for small groups of non-related workers.	1				1
7. The American public has mixed emotions about unions.	1				1
8. The union provides an effective means of communication between labor and management in modern industry.	5	1	2	1	9
9. Unions have affected our standard of living.	2	2	1	3	8
10. Because of lack of member interest, unions sometimes become autocratic rather than democratic.	1			1	2
11. The relationship between worker and employee can be greatly affected by the presence of a union.	2				2
12. Industries that are not organized frequently try to keep from becoming organized by satisfying their workers.	1	1	1		3
13. When several unions ban together, their strength of bargaining increases.	1	1			2
14. The union membership potential in blue collar workers is decreasing while the potential in white collar workers is increasing. If the unions expect to grow, therefore, it will have to be in the white collar ranks.		1		3	4
15. Generally accepted poor working conditions such as poor job security, working conditions, bad communications, etc. will often lead to organization of the workers into a union.		7	5	9	21

MANUFACTURING - LABOR CONCEPTS

Organized Labor - Need, Value	1	2	3	4	Tot.
16. There are distinct differences between craft and industrial unions.		3	1	1	5
17. The craft union is a source of skilled labor for the contractors.		1			1
18. There is much government control of both unions and management to insure fair practices by both.		1	4	1	6
19. The major problems facing unions today are automation and difficulty in organizing the white collar workers.		2	4	2	8
20. Strikes, which are usually the last resort, are usually very costly to both the company and labor and often the consumer, and this is the intent generally.			5	1	6
21. The larger and more powerful unions tend to set precedents for smaller and independent unions.			2		2
22. Poor publicity of the actions of some labor leaders has not helped the public opinion regarding unions in general.			1	3	4
23. Enlightened management tends to breed good management-labor relations and there is no substitute for this. There must be an understanding of labor and its problems. Management cannot just isolate and tolerate.			3		3
24. Labor unions often support favored political candidates.			2		2
25. The organizing of a company by a union is a difficult task and requires that an established procedure be followed under the jurisdiction of the N.L.R.B.			1		1
26. Policies, procedures, and officials of a union are generally open to a vote of the membership of the union.			2		2
27. The National unions provide locals with services and assistance including technical assistance, financial assistance during strikes and drives, and education and guidance.				1	1

FINANCIAL CONTROL CONCEPTS

	Financial Planning & Budgeting	1	2	3	4	Tot.
1.	When a budget is figured as close as possible, it becomes a useful operating plan.	5	1	6	4	16
2.	A company's surplus funds should be invested where they will produce the greatest return for the stockholders.	1				1
3.	When an individual plans to invest in a company or project, all factors which will affect the company should be investigated carefully.	1			1	2
4.	When an industry's annual report is properly (informatively) prepared, the stockholders can determine how much their investment is worth and how strong the company is.	2	2	4	4	12
5.	Companies must prepare financial planning statements several months, and in some cases years, in advance.		3	1		4
6.	Economic controls on small privately owned businesses are not as great or extensive as for larger companies.		1	1		2
7.	When competition is strongest, the financial planning of the company will be most extensive and effective.		1			1
8.	There must be sufficient capital to organize a business, to provide the necessary buildings, machines, and equipment to buy the raw materials and to meet payroll requirements.		2	1		3
9.	A company may obtain capital needed for establishment or expansion by borrowing or selling part of the ownership of the company.			2	3	5
10.	When a company does not wish to take an order for any reason it will frequently bid "very high" to discourage the customer.			1		1
11.	If a company does not realize a profit from its operation it is still obligated to its creditors and to sources of borrowed funds.			1		1
12.	There are many sources of capital for the established company including stocks and bonds.			7	2	9
13.	The controller has an important role in control of profits through correction and advisement based on facts from all phases of a company and sound experience.			3	2	5

FINANCIAL CONTROL CONCEPTS

Financial Planning & Budgeting		1	2	3	4	Tot.
14.	Forecasting is the attempt to scientifically determine the needs of a company in the future such as: production volume, new space requirements, employee level, amount of necessary research and development.			7	10	17
15.	A company may grow in many ways including internal expansion, acquisitions or by being acquired.				2	2
16.	Monies earned by a company are usually distributed in two ways: dividends to stockholders and reinvestment of profits into the company. There must be a balanced distribution that will reflect the goals of the stockholders.				2	2
17.	Very little hard cash changes hands in today's business world. Most transactions are a matter of checks, credit, debits, invoicing and balancing.				4	4

FINANCIAL CONTROL CONCEPTS

General Accounting

		1	2	3	4	Tot.
1.	When a system of checks and balances is utilized, mistakes in accounting will not multiply themselves.	2	1	2	2	7
2.	It is good business practice and often a requirement of the law to keep all business records on file for a period of time for tax purposes and general protection of the concern.	3	1			4
3.	A company will run most successfully and profitably if good accounting procedures are practiced.		3	2	2	7
4.	An internal auditing department will provide additional controls and checks on the operation of a company.			1		1

FINANCIAL CONTROL CONCEPTS

Cost Accounting

		1	2	3	4	Tot.
1.	Cost analysis and accounting is an important factor in the successful management of a business.	8	3	4	3	18
2.	When the cost of articles produced is figured carefully, it is easier for a company to make a reasonable profit.	1	3	2	1	7
3.	When accurate cost records are kept, a similar item or job can be evaluated from these records.	1				1
4.	When a bill of materials is used, simple but proper cost accounting principles can be used.	2			1	3
5.	The largest share of the consumer cost of a product results from materials and labor and the smallest share is for profit.	3	1			4
6.	When careful studies and analyses are made of operating, labor, and material costs, fairly accurate prices can be assigned to products.	6	4	3		13
7.	Overhead costs are often not understood or obvious to the public but are vital and must be determined in costing products.	3	3	1		7
8.	The various costs of production will vary percentage wise with different companies.		1			1
9.	When a company's product line becomes more diversified, its cost control function becomes more complicated.		1			1
10.	Before a product is to be manufactured it is necessary to establish the number of units which must be sold as the "break-even" point.			1		1
11.	Overhead costs are continual and must be considered in pricing, budgeting and controlling. They include rent, maintenance, heat, light, taxes and certain salaries.			4		4
12.	Direct costs are considered to be any expense which is directly applicable to the product.			2	1	3

FINANCIAL CONTROL CONCEPTS

Inventory Control		1	2	3	4	Tot.
1.	When the inventory control department is effective a balance between inventory and production can be maintained.	3	3	10	5	21
2.	Excessive inventory of parts or completed products can affect the profit of a company.		2	1		3
3.	Industries affected by seasonal markets may have difficulty in maintaining a balanced inventory.		1			1
4.	Most companies take a complete physical inventory at least annually to check on material use and production inventory and otherwise assist in financial planning.		1	1		2
5.	Often a continuous or "running" inventory will prove to be more effective and accurate than a periodic inventory.			1		1

FINANCIAL CONTROL CONCEPTS

Purchasing	1	2	3	4	Tot.
1. When the purchasing department is able to obtain the best materials at the lowest price, production costs are reduced.	3	1	4	2	10
2. When the object is to produce quality goods, production and quality problems can often be eliminated by purchasing quality raw materials.	2	1		1	4
3. Expediting, done by purchasing, is necessary to insure a continuous flow of materials for production.	2	3	2		7
4. Competitive bidding for vendor parts allows the company to obtain lower prices and control the material quality.	3	4	2	2	11
5. The use of a purchase order gives protective controls and will insure efficiency.	1				1
6. Prompt payment of bills will often result in a discount.	1				1
7. Parts ordered in large quantities will result in a cost reduction, generally, over the same parts ordered in similar quantities.		1			1
8. A company's bargaining power, when purchasing supplies, may be greatly affected by its geographical location.		1		1	2
9. Accurate and adequate load time requirements are needed by the purchasing department.		1	2		3
10. Although companies usually purchase from established sources, new sources are constantly being investigated as potential suppliers of new needs and better quality or costs of existing needs.			1	3	4
11. Frequently a company will divide its source of supply of purchased parts and/or raw materials to protect itself.			1		1
12. Standardization of piece parts can, for several products, be a valuable economic factor.			1	2	3

FINANCIAL CONTROL CONCEPTS

Data Processing	1	2	3	4	Tot.
1. When data processing is used, it will increase industry's efficiency and productivity.	6	5	9	12	32
2. When data processing is used, it usually does not reduce the total work force employed in any given company.	2		1	4	7

FINANCIAL CONTROL CONCEPTS

Credit		1	2	3	4	Tot.
1.	When a company is seeking credit, it is necessary to have a good credit rating in order to have credit extended.	1		1	0	2
2.	A company must have good credit relationships with their dealers and wholesalers.	1		1	0	2
3.	Time is money in the business world and this is an important factor in the collection of outstanding money.			1	0	1

MARKETING CONCEPTS

Product Service and Customer Service	1	2	3	4	Tot.
1. Many companies find it more profitable to purchase product service than to provide the service themselves.	1				1
2. Customer service is very important.	3	1	5		9
3. Customer service can provide important feedback for product improvement.			4	2	6
4. Product service is often a deciding factor when a customer makes a purchase.			2		2
5. The cost of product service to be covered by a guarantee or warrantee is built into the purchase price.			3		3
6. A function of customer service is to assist the customer with his problems and needs.			4	1	5

MARKETING CONCEPTS

Packaging	1	2	3	4	Tot.
1. Many and varied packaging and container techniques have been designed to protect the product in transit.		5	2	2	9
2. Packaging specifications are often specified by the consumer.		2			2
3. Effective packaging design will make the product more attractive and saleable.		2	2	1	5
4. Packaging in some form always exists between the producer and user and this function must be carefully designed, researched, planned, and undergo cost estimates.				1	1

MARKETING CONCEPTS

Sales		1	2	3	4	Tot.
1.	Making a product more available to consumer may increase sales. (The reverse is sometimes also true.)	3	3	1		7
2.	Internal training better prepares salesmen for specific markets.	3		1		4
3.	Sales psychology is often effectively used.	1		1		2
4.	Men, Mail and Magazines are some of the factors needed to ensure an adequate sales promotion program.	3				3
5.	It is important that the sales force and all others representing a company or product present a good image to the consumer.	3	1		3	7
6.	A salesman should know his competitors products as well as his own.	1			4	5
7.	A product should not be "sold" unless it can be delivered.		1		1	2
8.	A company that operates on a national basis will organize its sales staff to cover this large geographical area.		2			2
9.	Often company salesmen are used in high volume areas while manufacturers representatives are used in low volume areas.			2	2	4
10.	An effective salesman will communicate helpful information to both his company and the consumer.				6	6
11.	Sales forecasts can be very effective to a company if the data is valid and properly analyzed.				2	2

MARKETING CONCEPTS

Distribution	1	2	3	4	Tot.
1. When an industry enters the export market it greatly increases the growth potential and risk involved.	2		2		4
2. Many factors affect the choice of distribution channels for a product.	3	5	2	1	11
3. There are numerous channels for product distribution and many factors must be considered before a channel is chosen.	5	3	2	3	13
4. When a company furnishes a wide variety of products in the same field, distributors are encouraged to handle all products of the company.	3				3
5. Scientific routing is important to save time and reduce production costs.	1	1	1		3
6. Occasionally parts may be shipped to a regional fabrication center for economic and service reasons.		1			1
7. Many companies keep an inventory of completed products in stock at manufacturing facility and frequently at regional distribution centers for immediate shipment to the consumer		2	1		3
8. Distribution is an organizational not a physical function.		1			1
9. Over-production may require undesirable storage before distribution.		1	1		2
10. It is not necessary for a company to have an elaborate system of channels to provide adequate distribution of its products.				1	1
11. Effective distribution will be through channels that are as direct and economical as possible.				3	3
12. Many companies who produce for international markets will establish international distribution.				1	1
13. In some cases a wholesaler will act as a retailer which could add to the selling power and profits of a company.				1	1

MARKETING CONCEPTS

Advertising - Promotion	1	2	3	4	Tot.
1. Advertising must be altered to appeal to different groups.	2	1	3		6
2. When advertising material reaches the buyer with good impact, a greater sales volume will result.	1	1			2
3. Effective advertising programs are developed from market research.	2	2	2	2	8
4. Main purpose of advertising is to pave the way for someone to make sales.	3	2	4	2	11
5. Advertising agency plays an important role in corporation development.	4	1	3		8
6. Many companies find it more profitable to purchase advertising services than to provide this service themselves.	1	2	3	2	8
7. Packaging can serve many purposes including advertising.	8	3	3		14
8. Advertising on a container may affect pilferage.	1				1
9. Effective advertising will convince the consumer that the product or service being advertised will best serve his needs.	3	4	3	3	13
10. Ethical policies should be practiced in advertising.	1	1			2
11. A company may use different advertising media depending on the market it expects to reach.		3	3	1	7
12. Effective advertising can be considered an investment not an expense.		1	1	2	4
13. In a small company the sales staff frequently also coordinate promotion--advertising, customer services, distribution, etc.		1			1
14. Marketing techniques will vary with the product. This is especially true with consumer products as opposed to industrial goods.			3	1	4
15. Psychology often plays a major role in marketing products.			2		2
16. A promotion is an all-out effort to introduce a new product, increase sales, or enlarge the distribution in an existing territory or new geographical area.			9	3	12

MARKETING CONCEPTS

Advertising - Promotion	1	2	3	4	Tot.
17. Publicity is a form of free advertising but must be newsworthy to be offered to the public by a news media.				1	1
18. An advertising agency will frequently evaluate the effectiveness of a new campaign or promotional and make this information available to its client.				1	1

MARKETING CONCEPTS

Market Research	1	2	3	4	Tot.
1. A manufacturer must identify his market and its need before he can adequately serve the market through his product and/or service.	6	6	11	6	29
2. The marketing research specialist has a great effect on what products will be produced today, regardless of the apparent need.		1	2	1	4
3. A major function of market analysis is to determine the potential demand or need of a product and its profit potential.			5	4	9
4. A function of market research is to determine the attitude of the consumer to the company and its products.			3	1	4
5. Industrial and consumer goods are produced in relation to the needs or demands of consumers based on market research.				5	5

APPENDIX H

TEST - UNDERSTANDING INDUSTRY

CONSTRUCTION OF TEST ITEMS

You have been given a total of 18 blank test question cards which will be used to construct test items during the study of the six areas of the field study. Each week, after you have finalized your concepts, it is suggested that you write your questions on the basis of the concept. You should keep the questions as relative to the concept as possible and try to avoid asking questions of simple fact. Three (3) questions are to be turned in each week when you turn in your field manual work for review and evaluation. If you desire a copy of your test questions, make the copy before you turn in the card since the cards will not be returned to you. Be sure to indicate the correct answer (*) and source of the question on each card. Your name should be placed on the back of each question card. Examples follow:

CONCEPT

In the development of a new product, many steps are followed before the product is ready for the customer to purchase.

QUESTION

SOURCE OF QUESTION

Book ____________

Page ____________

Lecture ____________

Demo ____________

Other ____________

QUESTION

Which of the following is NOT usually considered a step in the development of a new product?

A. production
B. market analysis
C. idea screening
D. cost analysis
* E. plant maintenance

DATE	NUMBER IN CLASS	NUMBER WHO MISSED	DISTRACTORS					LEVEL OF DIFFICULTY	DISCRIMINATION
			A	B	C	D	E		
							*		

CONCEPT

When an increased number of controls and checks are placed on a new product development, the final result will be reduced development costs.

QUESTION

The final result of increasing the number of controls and checks placed on a new product development is usually

A. better design
* B. lower development costs
C. more freedom in design
D. higher overhead costs
E. less confusion in development stage

TEST

UNDERSTANDING CONCEPTS OF INDUSTRY

DIRECTED FIELD STUDY

IN INDUSTRY

STATE UNIVERSITY COLLEGE

OSWEGO, NEW YORK

(Please do not make any marks on this Test Booklet)

Select the answer of your choice in each of the following questions and mark the appropriate space on the answer sheet. Only one response is correct for each question. If you desire to change a response, completely erase the incorrect response and then proceed to mark your correction in the appropriate space.

1. A cost reduction program would be initiated in a company to:
   A. reduce the quality of goods produced.
   B. eliminate union security.
   C. determine overhead rates.
   D. improve its competitive position.

2. A segment of marketing research is:
   A. cost analysis.
   B. motivational research.
   C. cash flow.
   D. anticipation of surplus output.

3. Yellow dog contracts were outlawed by the:
   A. National Industrial Recovery Act.
   B. Wagner Act.
   C. Taft Hartley Act.
   D. Norris - LaGuardia Act.

4. In selling structural steel, a company would do best to advertise:
   A. in Life magazine.
   B. in a trade journal.
   C. on television in the late evening.
   D. on bill boards.

5. The overhead expenses of a production system may be considered as:
   A. direct costs.
   B. indirect costs.
   C. maintenance bills.

6. The union representative first involved with a grievance during the grievance procedure is the:
   A. shop steward.
   B. foreman.
   C. business agent.
   D. committeeman.

7. A job not delegated to a controllership is:
   A. evaluating.
   B. consulting.
   C. provision of capital.
   D. reporting.

8. In order to purchase wisely, the consumer should;
   A. "quiz" the salesclerk.
   B. shop around and compare carefully.
   C. base his selection solely on price.
   D. look first for the little "extras" included with the product.

9. Tooling used for the various physical operations in a plant should:
   A. be the best available to insure long life.
   B. be selected according to the job they are to perform.
   C. be stored in a warm dry place.
   D. have only the best qualified men use and work on them.

10. Which of the following is the most common distribution channel for consumer goods?
   A. from manufacturer directly to consumer?
   B. from manufacturer to company to consumer?
   C. from manufacturer to wholesaler to retailer to consumer?
   D. from producer to jobber to consumer?

11. The actual cost of the production of a product is known as the:
   A. direct cost.
   B. indirect cost.
   C. productive cost.
   D. labor rate.

12. Quality Control is important to industries because:
   A. it keeps industry from over-producing.
   B. it enables the industry to maintain a certain quality standard.
   C. it keeps cost down.
   D. it helps maintain production rates.

13. The term that best describes "cost accounting" is:
   A. cash flow.
   B. financial control tool.
   C. budgeting vs. prices.
   D. all of the above.

14. Time and motion studies and the MTM system is most closely related to what department?
   A. industrial engineering.
   B. industrial relations.
   C. production.
   D. quality control.

15. If an individual wishes to start a business and is unable to obtain funds from some private source, he may obtain federal aid from:
   A. the Chamber of Commerce.
   B. the Better Business Bureau.
   C. the Independent Businessmens' Association.
   D. the Small Business Administration.

16. Product service and advertising are part of:
   A. cost control.
   B. marketing.
   C. distribution.
   D. production planning.

17. The most economical method for a manufacturer to protect himself from materials shortage is:
    A. to purchase extra large amount of materials and store them at added expense.
    B. to have an inventory control system.
    C. to reduce the amount of scrap material.
    D. to pay premium prices for materials when they are needed, thereby reducing storage costs.

18. A recent innovation in scheduling now used by many companies is the use of:
    A. long range forecasting.
    B. monthly schedules.
    C. running inventories.
    D. data processing equipment.

19. Manufacturer representatives are:
    A. consumers.
    B. salesmen.
    C. purchasers.
    D. buyers.

20. One of the features of a bond is that it:
    A. has low risk involved.
    B. will have increased buying power on return of investment.
    C. give bearer a vote in the corporation.

21. Which of the following least effects the "lead time" required for an order?
    A. the general state of the economy.
    B. the customer's willingness to pay.
    C. the size of the customer's requested order.
    D. the urgency of the customer's order.

22. Annual Reports largely report the:
    A. status of the market.
    B. position of the stock market.
    C. business summary.
    D. financial status of the company.

23. One of the most effective methods of advertising today for consumer products is:
    A. radio.
    B. newspaper.
    C. magazines.
    D. television.

24. Of the following, the job that would not fall under the heading of quality control is:
    A. write inspection procedures.
    B. plan inspection gages and tools.
    C. schedule production.

25. What would be the best source of money for a man considering opening a small manufacturing business requiring $20,000.00?
    A. private savings.
    B. use of a bank loan or mortgage.
    C. incorporation and sale of stock.
    D. sale of bonds.

26. Research is necessary for continually updating advances in:
    A. new materials.
    B. new processes.
    C. need for new products.
    D. all the above.

27. The section or department of the plant which is concerned with the control of work-in-process is:
    A. Purchasing.
    B. Production Planning and Control.
    C. Engineering.
    D. Research and Development.

28. The annual report is:
    A. a report that management gives to the workers of the company.
    B. a report that the company makes to the stock holders giving them the financial condition of the company.
    C. a departmental report of the annual productions at the department.
    D. all of the above.

29. A leading psychological factor used in consumer advertising is:
    A. sex.
    B. wealth.
    C. emotional.
    D. security.

30. Which department will be primarily responsible for the way in which the product is manufactured and assembled?
    A. Maintenance Engineering.
    B. Process Engineering.
    C. Product Engineering.
    D. Industrial Engineering.

31. Market forecasts are:
    A. long in accumulating unncessary information.
    B. sometimes inaccurate.
    C. over productive.
    D. exact.

32. A company uses an advertising agency for the purpose of:
    A. saving tremendous amount of money.
    B. gaining access to markets.
    C. doing most of the advertising details and distribution of material.
    D. gaining a tax deduction.

33. The forecast of production schedules is based upon:
    A. amount of money available for future production.
    B. past sales records and predictions for the future.
    C. willingness of the engineering and quality control departments to maintain production standards.
    D. the amount of scrap material left over from last months production.

34. Cost accounting is the maintaining of formal records and coordinating information so:
    A. an audit won't be necessary.
    B. management can make informed decisions.
    C. changes won't be necessary in the budget.
    D. overhead costs will be partially known.

35. Those workers who are paid according to the number of pieces produced are the:
    A. non-exempt.
    B. exempt.
    C. incentive.
    D. union members.

36. Items taken into consideration in the development of a new product are:
    A. costs, consumer surveys, and plant facilities.
    B. dependent only on what the president of the company says.
    C. strictly trial and error.
    D. subject to the competition's approval.

37. An attempt to scientifically determine the needs of a company in the future is known as:
    A. formal impressions of marketable limits.
    B. forecasting.
    C. indirect material costs.
    D. research and development.

38. One role of plant engineering in industry is to:
    A. design new products.
    B. set up controls for the maintenance of quality limits.
    C. assign projects to members of research and development.
    D. insure continued production after the manufacturing facilities are designed and laid out.

39. A union whose membership is composed of people of one trade or calling; such as electricians, is called:
    A. an industrial union.
    B. a guild.
    C. a craft union.
    D. a closed shop.
    E. a combination union.

40. Equity capital is that money put into a business by:
    A. borrowing from an outside source.
    B. an equal amount of competitors.
    C. expansion
    D. the owners of the business.

41. Which of the following types of research is most generally carried on by industry?
    - A. applied.
    - B. pure.
    - C. operations.
    - D. personnel.

42. The final step in a grievance procedure is:
    - A. strike.
    - B. meeting of union president and personnel director.
    - C. meeting of shop steward and union president.
    - D. arbitration.

43. Cost estimates on development of new products are important because:
    - A. they reveal whether or not a profit can be made.
    - B. the company may not have enough money.
    - C. the company must obtain the approval of the stockholders.

44. Customer service is:
    - A. a delivery service used by some companies.
    - B. a service to customers that is used to promote future business.
    - C. a place where goods can be exchanged.
    - D. giving away gifts to customers.

45. Scheduling is a function of the:
    - A. production department.
    - B. production control department.
    - C. quality control department.
    - D. industrial engineering department.

46. A company marketing a new product should:
    - A. produce it until demand for it ceases.
    - B. produce the product for a set length of time then stop production.
    - C. institute changes from time to time so that the customer will have to buy the latest model to replace the old one.
    - D. look into probable changes in product usage and customer demands and change the product as needed.

47. Which of the following shows the financial status of the company at one instant of time:
    - A. balance sheet?
    - B. profit and loss statement?
    - C. manufacturing cost statement?
    - D. cost sheet?

48. The type of inspection that usually catches below quality parts at their place of origin is known as:
    - A. assembly inspection.
    - B. quality inspection.
    - C. in-line-inspection.
    - D. centralized inspection.

49. The basis of union power is:
    A. strike.
    B. walkout.
    C. collective bargaining.
    D. grievance.

50. The many reviews, checks, and evaluations that are always a part of product development are important because they:
    A. allow the company to employ many workers.
    B. allow management to arrive at product worth decisions intelligently.
    C. allow the company to have many committees, which are status symbols in industry.

51. Generally speaking, research is divided into two main categories, which are:
    A. impure and pure.
    B. experimental and applied.
    C. pure and applied.
    D. simple and complex.

52. One of the following is not a current union problem:
    A. automation.
    B. integration.
    C. organization of blue collar workers.
    D. organization of white collar workers.

53. In today's complex industry, the purchasing power of an employee's earnings is referred to as his:
    A. monetary wage.
    B. salary.
    C. real wage.
    D. annual improvement wage.

54. The process of adding new products to a line or adding more varieties and sizes of products is known as:
    A. standardization.
    B. simplification.
    C. diversification.
    D. modernization.

55. To determine who and where the customer is; what he needs, wants and will buy; where and how he will buy; and how much he will pay is the function of:
    A. sales.
    B. marketing research.
    C. product planning.
    D. advertising.

56. Since man hours are important to production, industry uses programs to keep the loss of manhours to a minimum, and such a program is in the area of:
    A. personnel.
    B. safety.
    C. production control.
    D. research and development.

57. A patent is:
    A. always an advantage to a company.
    B. always a disadvantage to a company.
    C. an item that could be both an advantage and a disadvantage to a company.
    D. a form of organization in a company.

58. Before the merger of the A.F.ofL. and C.I.O. in 1955, the A.F.of L. was primarily made up of:
    A. trade unions.
    B. industrial unions.
    C. craft unions.
    D. United Auto Workers union.

59. When industry speaks of communications, they mean:
    A. telephone and telegraph.
    B. exchange of information between personnel or departments.
    C. letters.
    D. television.

60. One pressure unions can bring to bear upon the employer is in not buying the employer's product or using his services. This is known as a
    A. lockout.
    B. service avoidance.
    C. boycott.
    D. purchase strike.

61. Which of the following is not considered a fringe benefit:
    A. vacations.
    B. recreation programs.
    C. incentive pay.
    D. hospitalization.

62. An open shop means that:
    A. employees work long hours.
    B. contracts are open to discussion.
    C. employees may be union or non-union.
    D. outside soliciting is allowed.

63. Most major companies have rather extensive fringe benefit programs for their employees because they are:
    A. able to use these programs for tax deduction purposes.
    B. able to offer reduced salaries due to these programs.
    C. able to attract and retain employees through these programs.
    D. forced to do so by federal and local regulations.

64. When a union is attempting to organize a company, a company vote is held under the supervision of:
    A. the Better Business Bureau.
    B. the Interstate Commerce Commission.
    C. the organizing union.
    D. the National Association of Manufacturers.
    E. the N.L.R.B. (National Labor Relations Board)

65. A production schedule is used to:
   A. facilitate the smooth flow of parts and raw materials to enable maximum production.
   B. show how a product is produced (used mostly as a demonstration).
   C. let the worker know how much work the plant has under production.
   D. all of the above.

66. The most common type of loan used to finance a company is:
   A. bond.
   B. common stock.
   C. preferred stock.

67. When looking for a job, employers are usually most impressed by:
   A. a strong record of past accomplishment.
   B. an attitude that you really want to get somewhere.
   C. you have had many different jobs with companies making the same product as the company you are applying to.
   D. the fact that you might be able to help the company somehow.

68. Specifications are usually designated to:
   A. provide minimum cost.
   B. provide maximum quality.
   C. insure uniform quality between several bidders.

69. Benefits that the employee receives other than his real wage are known as:
   A. extra benefits.
   B. employee benefits.
   C. fringe benefits.
   D. earned benefits.

70. In order to determine if a product will stand up under customer usage a company should:
   A. produce the product and see what the customers can do to it.
   B. reduce the chances of failure by building the product stronger than is necessary.
   C. test the product under actual or near actual conditions of usage and build in as much strength as necessary.
   D. sell the product only to those people who will use it carefully.

71. Companies may stockpile "reserves" or "banks" of raw materials and subassembly component parts to:
   A. raise the price of its products.
   B. corner the market.
   C. prepare for expected shortages of materials.
   D. force competitors to go out of business.

72. A grievance between a company and a union over a contract interpretation or an action taken against a certain employee is:
A. a complaint.
B. a respected statute.
C. an inadvertence of law.
D. an official disagreement.

73. The function of routing in production control determines:
A. the total time to perform the manufacturing operation.
B. where each operation is to be performed.
C. when an operation is to be performed.
D. future trends in manufacturing requirements.

74. The employee actually receives more than his gross pay but he doesn't actually see this money since it is:
A. deducted for state income tax.
A. part of medicare.
C. in the form of fringe benefits.
D. taken out for social security.

75. Uniformity and standardization of a product is controlled by:
A. production planning.
B. manufacturing engineering.
C. quality control.
D. methods.

76. Which of the following is most directly involved with standards and tolerances:
A. machinist on the line.
B. foreman on the line.
C. design engineer.
D. salesman.

77. Goods which are produced at a predetermined rate and move from operation to operation without controlled storage at any point in the process are classified as:
A. job lot manufactured products.
B. intermittent manufactured products.
C. continuous manufactured goods.
D. custom or special made products.

78. Of the types of capital a company can get from either an individual or an institution, which of the following has the greatest risk to the principal:
A. bank loan?
B. bonds?
C. preferred stock?
D. common stock?

79. Products are designed to meet standard codes because they will be:
A. cheaper.
B. more attractive.
C. safer.
D. easier to test.

80. The two general classifications of stock are:
    A. common and preferred.
    B. preferred and treasury.
    C. treasury and common.

81. The organization that supervises the organizing of a company is the:
    A. NLRB.
    B. AFL-CIO.
    C. UAW.

82. The determination of optimum inventory levels and procedures for their review and adjustment is usually associated with:
    A. purchasing.
    B. inventory control.
    C. inventory management.
    D. cost control.

83. The best way to anticipate demand for new products is to:
    A. wait for people to demand the product, then produce it.
    B. investigate market potential for a new product.
    C. produce a new product and hope it will sell.
    D. wait until your competitor markets a new product and then follow his lead.

84. The use of a budget in a company may determine:
    A. where the money will go.
    B. where the money went.
    C. how the stock was sold.
    D. the net worth of the company.

85. The terms lead-lag and econometrics are associated with:
    A. production.
    B. forecasting.
    C. advertising.

86. The standardization of parts lends itself to:
    A. easier and cheaper production.
    B. government laws.
    C. more complication of design procedures.

87. Strangely enough, unions do not represent the bulk of U.S. workers. Organized labor represents about:
    A. 1/2 of the total labor force.
    B. 1/3 of the total labor force.
    C. 1/4 of the total labor force.
    D. 1/8 of the total labor force.

88. Product testing is done because this is one method the company has available to tell them how a product will:
    A. sell.
    B. cost.
    C. perform.
    D. look.

89. In order to get a good even flow of parts for final assembly on out to the customer, which of these is needed:
   A. clean floors.
   B. scheduling.
   C. maintenance.
   D. quality control.

90. The principle interest of almost every corporation is to:
   A. support employees.
   B. make a profit.
   C. help the war effort.
   D. make its employees happy.

91. The grievance procedure is:
   A. time off from work.
   B. a method of solving a problem.
   C. a way of keeping men working.
   D. a time study system.

92. Plant Engineering is mostly associated with which of the following activities:
   A. design.
   B. testing.
   C. maintenance.
   D. tooling.

93. Most large manufacturing organizations are owned by which of the following forms of ownership:
   A. individual proprietorship.
   B. general partnership.
   C. cooperative.
   D. corporation.

94. Union membership is a means of:
   A. gaining all the things you as a worker think you deserve.
   B. securing a voice through numbers and organization to effectively bargain with an employer.
   C. companies getting the most work from each employee.
   D. taking the individual approach away from the employee and placing the settling of problems in the hands of many people.

95. The staff relationship that exists between the Personnel Department and other departments is for the following reason. The Personnel Department:
   A. has the last say in filling a position.
   B. determines what type of person should fill a particular job.
   C. renders a service to other departments in screening and conferring.
   D. sets standards of work excellence.

96. When a difference of opinion exists between labor and management, the normal course of events would be:
    - A. for the worker to complain to the shop steward, who could call a strike.
    - B. for the worker to complain to the shop foreman, who could call a strike.
    - C. for the worker to submit a grievance form to his shop steward.
    - D. for the worker to use the "Open Door" to see the President of the company.

97. The reason that most industries have a medical center with a nurse or doctor on duty is:
    - A. to perform some minor surgery.
    - B. to treat minor injuries.
    - C. to impress visitors going through the plant.
    - D. to give physical examinations to prospective employees.

98. The law which established the first national policy of protecting the right of workers to organize and elect their representatives for collective bargaining was:
    - A. Davis-Bacon Act, 1931.
    - B. National Labor Relations (Wagner) Act, 1935.
    - C. Sherman Antitrust Act, 1890.
    - D. Taft-Hartley (Labor Management Relations Act), 1947.

99. The system used to determine promotions of employees, based on their performance and ability is known as:
    - A. automatic raise.
    - B. merit rating.
    - C. earned promotion.
    - D. incentive.

100. When laying out machinery for a new plant, which one of the following criterion would receive most attention:
    - A. placement of machines according to the amount of time they will be used?
    - B. placement of the machines according to the complexity of the operations they will perform?
    - C. placement of the machines according to the process that will be used to fabricate the parts to be made?
    - D. placement of the machines according to the power requirements needed to operate them.

NOTE: This test is specifically designed for evaluating activity in the Directed Field Study and may not be appropriate for use in any other course or level. It is suggested that revision of test items and selection of appropriate questions be done before using this test for high school or junior high school evaluation.

ANSWER KEY - UNDERSTANDING CONCEPTS OF INDUSTRY

stion	Answer	Question	Answer	Question	Answer
1	D	41	A	81	A
2	B	42	D	82	B
3	D	43	A	83	B
4	B	44	B	84	A
5	B	45	B	85	B
6	A	46	D	86	A
7	C	47	A	87	C
8	B	48	C	88	C
9	B	49	A	89	B
10	C	50	B	90	B
11	A	51	C	91	B
12	B	52	C	92	C
13	B	53	C	93	D
14	A	54	C	94	B
15	D	55	B	95	C
16	B	56	A	96	C
17	B	57	C	97	B
18	D	58	C	98	B
19	B	59	B	99	B
20	A	60	C	100	C
21	B	61	C		
22	D	62	C		
23	D	63	C		
24	C	64	A		
25	B	65	A		
26	D	66	A		
27	B	67	A		
28	B	68	C		
29	A	69	C		
30	B	70	C		
31	B	71	C		
32	C	72	D		
33	B	73	B		
34	B	74	C		
35	C	75	C		
36	A	76	C		
37	B	77	C		
38	D	78	D		
39	C	79	C		
40	D	80	A		

APPENDIX I

EXAMPLES OF CURRICULUM RESOURCE UNITS

AREA: Economics, Organization, and Management

CATEGORY: Forms of Ownership

CONCEPTUAL STATEMENT: Ownership is a legal term pertaining to business structures meaning possession of the assets of the enterprise, the power to determine the policies of operation, and the right to receive and dispose of the proceeds.

I. SUB CONCEPTS

A. Selection of the type of ownership must be based on sound evaluation of the needs, objectives, and goals of that particular business.

B. No one form of ownership has yet been devised that is equally satisfactory for all kinds of enterprises.

C. The variety of forms of business ownership available today is one reflection of the complexity of business activity in the modern world.

II. LESSON TOPICS

A. Factors considered in selecting a form of ownership

Major Ownership Forms:

B. Sole Proprietorship

C. General Partnership

D. Corporation

E. Co-operative

III. ACTIVITIES

A. In a mass production unit, the students should determine the form of ownership that will best meet their needs.

B. Analyze the general forms of ownership within your community and evaluate their effectiveness.

C. Create the organization (form of ownership) for a suggested mass production product for a new industry in your community.

D. Create a contest situation where teams of students choose the proper form of ownership for a given set of stated factors.

E. Study and analyze the form of organization of the school system you are in.

IV. RESOURCES

A. Books

1. Henderson and Haas, *Industrial Organization and Management Fundamentals*.
2. Hastings, *Fundamentals of Business Enterprise*.
3. Cauley, *Our Economy*.
4. Amrine and others, *Manufacturing Organization and Management*.

B. Films

1. "What Is a Corporation"
2. "Mr. Webster Takes Stock"
3. "Modern Corporation, I"
4. "Modern Corporation, II"

C. Others

1. "Industrial Organization and Employees", N.A.M. series.

I. EXPANSION OF SUB CONCEPTS:

A. Selection of the type of ownership must be based on sound evaluation of the needs, objectives and goals of that particular business.

1. Identification of the needs, goals and objectives of a particular business must be a prerequisite to selection.

2. Most important in consideration of the type of ownership to be selected is the size of the business and the risk the owner is willing to carry.

3. Criteria such as amounts of capital needed, legal requirements and allowable flexibility of management must be considered.

B. No one form of ownership has yet been devised that is equally satisfactory for all kinds of enterprises.

1. Each form of ownership is valid and applicable to a specific type of enterprise.

2. It is impossible to select the form of ownership without first understanding the advantages and disadvantages of each.

3. The problem is selecting the form which offers the greatest number of desirable features and least number of undesirable features.

C. The variety of forms of business ownership available today is a reflection of the complexity of business activity in the modern world.

1. The sole proprietorship is generally the least complex of the ownership forms -- however, with the greatest risks.

2. The general partnership (association of two or more persons to carry on as co-owners) allows for a sharing of responsibilities among partners, all of whom may participate actively in the operation of the business.

3. The corporation, the dominant form of ownership in our industrial economy (in terms of total dollar income) is a legal entity in itself.

4. The co-operative, a special form of business ownership, is designed to supply goods and services to its members at lower prices than could otherwise be realized.

II. LESSON TOPICS:

A. Title: Factors Considered in Selecting a Form of Ownership

1. **Concepts:**

The choice for selection of the type of ownership will depend largely on the problems the enterprise will have to face while reaching its ultimate objectives.

2. **Introduction:**

This topic would be appropriate either immediately prior to, or immediately following, presentations given on the actual types of ownership.

3. **Presentation:**

   a. Why does a particular enterprise form its ownership the way it does?

   b. Factors affecting the decision made on the type of ownership to be used:

      (1) Amount of capital available.
      (2) Liabilities involved, and the amount the owners are willing to risk.
      (3) Type of manufacturing to be carried on, if any.
      (4) Method to be used for dividing profits among the owners.
      (5) Potential market (whether the market is local or more extensive).
      (6) Effect of government control on each form.
      (7) Extent of tax liability.

4. **Evaluation:**

After the lesson is given, a list of products and/or services applicable to the forming of an enterprise should be presented to the class. The students could choose one or two of these products or services and suggest what type of ownership would be most suitable to that enterprise. Detailed reasons for selection should be given.

5. **References:**

Henderson and Haas, Industrial Organization and Management Fundamentals. pp. 30 - 38.

National Association of Manufacturers, Teachers Guide - Industry and the American Economy Series. pp. 7 - 9.

B. __Title:__ Sole Proprietorship

1. __Concepts:__

The individual proprietorship is both simple to create and ideally suited to small enterprises. It does, however, involve the greatest amount of personal risk.

2. __Introduction:__

This topic would be most appropriately taught before going into a unit on mass production or a study of American industry. It would be most effectively taught if specific examples of proprietorships within the local community were discussed while the lesson is being given.

3. __Presentation:__

a. Organization

(1) One person owns, manages and works in the business.
(2) He may hire other people to work for him.
(3) Limited legal requirements by the government.

(a) Permits are required in some cases such as a license for a barbershop or a certificate for a restaurant.

(b) No legal distinction is made between a proprietor's personal property and his business property.

b. Fields of use

(1) Retailing.
(2) Service trades such as a television repair shop or a beauty parlor.
(3) The professions such as medicine, dentistry, and law.
(4) Agriculture.

c. Advantages of the sole proprietorship

(1) Ownership of all profits.
(2) Ease of organization.
(3) Freedom of action.
(4) Minimum of legal restrictions.
(5) Maximum personal incentive.
(6) Some possible tax benefits over corporations.
(7) Ease of dissolution.

d. Disadvantages of the proprietorship

(1) Unlimited liability for business debts.
(2) Limited capital resources.
(3) Life ends with the death of the proprietor.

4. **Evaluation:**

After the lesson on this topic has been given, each student could choose a local enterprise familiar to him to determine the following general information: the owner, how many people work for the owner (if any), with what type of products and/or services does he deal, etc. This information could be discussed and evaluated by the class as to the kind of ownership for each enterprise studied.

5. **References:**

Bornemann, Alfred H., Fundamentals of Industrial Management. p. 52.

Hastings, Paul G., Fundamentals of Business Enterprise. pp. 71 - 73.

C. **Title:** General Partnership

1. **Concepts:**

The general partnership allows for a sharing of responsibilities among partners — all of whom participate actively in the operation of the business.

Partnership defined: An association of two or more persons to carry on as co-owners of a business for profit.

2. **Introduction:**

This topic would be appropriate at the beginning of a unit in mass production or as an introduction to the concept of industry.

It would be most effective if discussion becomes necessary through a need for selecting an organization form.

3. **Presentation:**

a. Types of partnerships

- (1) General partnership: sharing of responsibilities
- (2) Limited partnership
  - (a) Limited liability
  - (b) Voice of limited partner

b. Kinds of partners

- (1) Secret parner
- (2) Silent partner
- (3) Dormant partner
- (4) Nominal partner

c. Partnership agreements

- (1) Articles of partnership
- (2) Duration of the agreement
- (3) Salaries of partners
- (4) Distribution of profits and losses
- (5) Individual duties and responsibilities

d. Advantages of partnership

- (1) Allows some specialization of managerial skills
- (2) Good credit standing
- (3) Legal restrictions limited
- (4) Freedom from tax on business income

e. Disadvantages of partnership

- (1) Unlimited liability of partners
- (2) Restricted transfer of ownership

4. **Evaluation:**

Review of some of the local merchants, illustrating characteristics of this form of business, could lead to a discussion of their reasons for selecting the Partnership as an ownership form. Students could contribute suggestions as to reasons from their own knowledge of the business. This participation would then be evaluated by the instructor.

5. **References:**

Musselman and Hughes, Introduction to Modern Business. pp. 212 - 221.

Hastings, Paul G., Fundamentals of Business Enterprise. pp. 73 - 75.

D. **Title:** Corporations

1. **Concepts:**

   The corporation, the dominant form of ownership in our industrial economy, is a legal entity with individual rights.

2. **Introduction:**

   This might be appropriate as part of an introduction to Industrial Arts, since this is the ownership form that we would most likely be teaching about when interpreting modern industry.

3. **Presentation:**

   a. Corporation: an association of individuals united for some common purpose, permitted by law to use a common name -- an artificial being.

      (1) Rights of corporations
         (a) Dispose of property
         (b) Own
         (c) Sue
         (d) To be sued

   b. Corporation ownership

      (1) Stock
      (2) Non-stock

   c. Types of corporation
      (1) Profit and non-profit
      (2) Open and closed
      (3) Public and private

   d. Steps involved in incorporating

      (1) Secure application and file with state official
      (2) Pay fees and organization taxes
      (3) A charter is issued
      (4) Meeting of stockholders
      (5) Election of officers

   e. Classes of corporate stock
      (1) Common stock
      (2) Preferred stock

   f. Role of stockholders

   g. Advantages of corporate form of ownership

      (1) Limited stockholders liability
      (2) Easy to transfer ownership
      (3) More permanent
      (4) Permits use of management specialists

h. Disadvantages of corporate ownership

(1) Subject to special taxation
(2) Subject to state and federal controls
(3) Most complex
(4) Tendency for impersonal relationships

4. **Evaluation:**

An appropriate evaluation might be achieved through requirement of the class to form a corporation as part of a unit on American industry. The technical accuracy of this activity could be evaluated.

5. **References:**

Musselman and Hughes, Introduction to Modern Business, pp. 59 - 67, 76 - 80.

E. Title: Co-Operative

1. Concepts:

The co-operative is an ownership form designed to supply goods and services at reduced prices for its members.

2. Introduction:

This lesson topic would be appropriate as part of a discussion of ownership forms in general. It might be in response to a question concerning a local farm co-operative and its prices.

3. Presentation:

a. Organization

- (1) Small co-operative: manager directs the business
- (2) Large co-operative: board of directors with operating manager

b. Major types

- (1) Consumer co-operative: co-operative retail store
- (2) Agricultural co-operative: associations operated by growers or producers of a single product or group of closely related products.
- (3) Agricultural co-operative: purchasing and reselling to its members.

c. Advantages

- (1) Tax advantage
- (2) Obtaining favorable prices

d. Disadvantages

- (1) Lack of freedom
- (2) Absence of profit incentive

4. Evaluation:

Evaluation might be achieved by assigning the class the task of identifying ownership forms of unfamiliar enterprises based on characteristics of that enterprise, and by asking for reasons for this selection.

5. References:

Husselman and Hughes, Introduction to Modern Business, pp. 70 - 72.

Hastings, Fundamentals of Business Enterprise, pp. 80 - 83.

III. ACTIVITIES:

A. In a mass production unit, the students should determine the form of ownership that will best meet their needs.

1. Have the students search out all possible factors that must be considered in forming any business.

2. In a general class discussion have the students state these factors that pertain to their environment and have them ready to defend their position.

3. Have the students match the factors with the form of ownership that could best provide the means to fulfill the basic needs for such a creation.

4. Once the form has been established, have a team or committee set up the limits and policies of such a form of ownership.

5. The next logical step would be setting up the organizational structure.

B. Analyze the general forms of ownership within your community and evaluate their effectiveness.

1. Many communities or regions are known by the form or type of ownership that is common in that location. It is important to have the students determine such a classification (assuming one exists) and the reasons for such an act.

2. Divide the students into committees to analyze the businesses in that location. They should determine what type of ownership would be best for each form of business present. Have other groups collect data on the effectiveness of these businesses. Finally, have a class discussion and bring out all these points.

3. To fulfill these above activities, the students should visit the businesses, write letters, hear business reports, have guest speakers, gather data from other locations to have something to compare their location with, etc.

C. Create the organization (in terms of form of ownership) for enlarging a possible mass production product, or some product suggested by one of the students, for your community.

1. Possibly after you are well along in your mass production product or even finished with it, you could present the possibility of expanding this activity into a real industry. If the students are interested in the product they will be interested in the follow-up of setting up a larger business to produce large quantities of finished products.

2. You could also take a student's suggestion like a dream car or modern rocket ship as a product to be produced. Use the wonder of their interest in the product to put across the function of choosing the proper form of ownership.

D. Group the students into teams for a contest or game situation where they choose the proper form of ownership for a given set of stated factors and needs.

1. Each team thus has the same information to work from. Once they have formed their choice of ownership, they must be prepared to defend and argue that choice. The team with the most convincing choice wins.

2. To have success with this activity, you must have a strong controlling and evaluating team on hand to see that fair play is observed.

3. A possible reward for the winner could be a higher mark than that given to the loser. A little reward will add to the students' willingness to play the game.

E. Study and analyze the form of ownership of the school system you are in.

1. Most of the students have no idea as to who owns the school. They associate the teachers and, even more so, the administration with ownership when this is not the case at all. Having the students find out for themselves who is the true owner of the school will have great meaning. Their whole attitude toward the school may change.

2. Divide the students into several groups to explore different levels of authority. Have them communicate by travel, letters, guest speakers, etc. with various levels such as the schools, teachers and administrators, the community officials, the state educational authorities, and even on to the federal level.

IV. **RESOURCES:**

A. **Books:**

1. Henderson, Herman B. and Haas, Albert E., Industrial Organization and Management Fundamentals. New York: The Industrial Press, 1961.

2. Hastings, Paul G., Fundamentals of Business Enterprise. New York: D. Van Nostrand Co., Inc., 1961.

3. Cauley, Troy J., Our Economy. Scranton, Pennsylvania: International Textbook Company, 1963.

4. Amrine, H. T. and J. A. Ritchey, and O. S. Hulley, Manufacturing Organization and Management, 2nd edition. Englwood Cliffs, N.J.: Prentice-Hall, Inc., 1966.

B. **Films:**

1. "What Is a Corporation", 11 minutes, b&w. CS-353, $2.15; color CSC-353, $3.40. This is a story that shows the differences between a partnership and a corporation. Obtained from the Audio-Visual Center, Division of University Extension, Indiana University, Bloomington, Indiana.

2. "Mr. Webster Takes Stock", 27 minutes, free. This film shows how the average American puts his money to work for him in the form of stocks. It also discusses our economic system. It is available from Sterling-Movies U.S.A., Inc., 43 West 61st Street, New York, New York 10023.

3. "Modern Corporation, I", 28 minutes, $5.50. This film describes the modern role of industrial corporations in our community etc. It is available from the University of Michigan in Ann Arbor.

4. "Modern Corporation, II", 28 minutes, $5.50. This film shows the changing role of the stockholders in the modern corporation. It is available from the University of Michigan.

C. **Others:**

1. "Industrial Organization and Employees", number nine in a series entitled the "Industry and the American Economy" produced by the National Association of Manufacturers.

AREA: Industrial Relations

CATEGORY: Industrial Organization

CONCEPTUAL STATEMENT: When a company organizes according to a set structure, the operations and processes within a company can be carried out in an efficient organized manner.

I. SUB CONCEPTS

A. The organization of a company may be either very simple or quite complex in its structure.

B. Workers and management of a company should understand the structure of the company so they will know to whom they are responsible.

C. In a line and staff organization, which assumes a specialist at the head of the staff, responsibility may be delegated through the line.

D. As the size of a corporation grows, it often becomes necessary for it to deviate from the original organization.

II. LESSON TOPICS

A. Need for Organization

B. Organizational Design

C. Organizational Charts

  1. Ideal Approach
  2. Need for Flexibility

III. ACTIVITIES

A. Study organizational charts and make one up of the local community government.

B. Develop an organizational chart of the school district from the top through the various teachers.

C. Give the students titles of staff and let them develop a logical organizational chart.

IV. RESOURCES

A. Books

1. Armine, Ritchey and Hulley, Manufacturing Organization and Management.
2. Owen, W. V. and Finston, Howard, Industrial Relations.
3. George, Claude S, Management in Industry.

B. Periodicals

1. DuPont, "The Organization and the Individual"
2. National Association of Manufacturers, "Industry: Organization and Employees"

I. **EXPANSION OF SUB CONCEPTS:**

A. The organization of a company may be either very simple or quite complex in its structure.

1. There are several types of organizations which can be used in industry.

a. Line

b. Line and staff

c. Staff

d. Committee

e. Functional

f. Combinations of any of the above

2. The organizations can be divided by function, process, equipment, product or location.

3. Responsibility and authority is delegated to certain positions in the organization.

B. Workers and management should understand the organization of the company so they will know to whom they are responsible.

1. Authority in an organization should follow a specific structure.

2. Workers and management should recognize the authority above them and their position in the structure.

C. In a line and staff organization:

1. Specialists may head a staff or committee for the more efficient running of the company.

2. Specialists still must have to be aware of their position in the organization and report to their superiors in the organization.

D. Divert from original organization

1. Business may start as either a partnership or a sole proprietor and develop into a corporation.

2. A corporation can expand either within itself or can subsidize other companies, thus delegating their authority.

3. Diversion from original line of organization may be due to growth.

4. A company can grow and change organization by reinvestment, new products, or by expanding into other lines.

II. **LESSON TOPICS:**

A. **Title:** Need for Organization

1. **Concepts:**

The organizational structure of a company may be either very simple or quite complex in its development.

2. **Introduction:**

This topic would be appropriate at the beginning of a course in industrial arts. This would be valuable in any situation where individuals work together to obtain specific goals.

3. **Presentation:**

a. Why is organization necessary?

(1) Relate each person to the common purpose and to the other persons in the company.
(2) Accomplish essential coordination

b. Type of organizational structures

(1) Line
(2) Line and Staff
(3) Staff
    (a) Advisory
    (b) Control
    (c) Service
    (d) Coordination
(4) Functional
(5) Committee

c. Give brief examples of each of the structures.

4. **Evaluation:**

Give a written test on the types of structures and have students give examples of the different organizations.

5. **References:**

Amrine, Ritchey, and Hulley, Manufacturing Organization and Management. pp. 33 - 36.

Owen, W. F. and Finston, Howard, Industrial Relations, pp. 67 - 72.

B. Title: Organisational Design

1. Concepts:

Workers and management should understand the structure of the company so they will know to whom they are responsible.

2. Introduction:

Once the goals and objectives of a company are formulated, it is necessary to determine the functions that will achieve these goals.

This lesson would fit well into the beginning of the course to explain the importance of an organised group.

3. Presentation:

a. What is organisational design?

b. Typical functions of manufacturing organisation

(1) Product
(2) Distribution
(3) Finance
(4) Marketing

c. Grouping and relating functions together

(1) Managers
(2) Foremen
(3) Laborers

d. Filling the job function with personnel

(1) Recruiting
(2) Training
(3) Promoting

4. Evaluation:

Divide the class into two groups and have them organise into two different types of structures. Assign each a specific task and evaluate the results. Have the students analyse the results of their organisation as compared to the other.

5. References:

Amrine, Ritchey, and Hulley, Manufacturing Organisation and Management. pp. 33 - 36.

Owen, W. F. and Finston, Howard, Industrial Relations. pp. 67 - 72.

C. Title: Organizational Charts

1. **Concepts:**

The organization of a company is illustrated graphically through the use of organizational charts.

2. **Introduction:**

This lesson would best be used in describing organizations to show the different types. It is also helpful in illustrating the line of authority as it passes down through the ranks.

3. **Presentation:**

a. What is an organization chart?

b. What are its functions?

(1) Avoids confusion of overlapping duties
(2) Points out problems in job assignment
(3) Brings to light illogical grouping
(4) Brings to light the omission of an activity

c. Construction of chart.

(1) Show use of horizontal and vertical arrangements
(2) Show use of light, dark, and broken lines
(3) Show use of rectangles

4. **Evaluation:**

Give the students functions and have them draw the chart and explain how and why the organization was used. Since many different ideas will develop, have them obtain a fellow student's chart and evaluate it with his own thinking.

Functions could be selected from school, government or a fictitious industry.

5. **References:**

Amrine, Ritchey, and Hulley, Manufacturing Organization and Management, pp. 29 - 30.

DuPont, "The Organization and the Individual"

III. ACTIVITIES:

A. Organizational Chart Analysis

Collect, classify and analyze several different organizational charts. This activity would involve the individual for collection of charts, groups for discussion, and class participation during the guest speaker's presentation.

1. Obtain organizational charts from several different sources such as books, annual reports or periodicals. Classify these into different groups as to the type they best fit and discuss as many as desired.

2. Invite a guest speaker who may be an officer in an industry or within the local community government and have him discuss the chart in which he works. He should include the way it was designed and why.

3. Obtain the school organizational chart and analyze it with class participation.

B. Development of Organizational Charts

1. Give the student several functions and havethem develop or design an organizational chart arranging these functions as they feel is proper.

   a. The functions may be from an industrial firm, government or other which requires an organizational chart.

   b. Different types of lines may be used and different forms of structures.

2. Have students give a written evaluation explaining why they have arranged the chart as they did.

   a. This could be done as group participation or individually.

   b. The value the students receive from the lesson could be evaluated here.

C. Development of Class Organization

1. Organize class for clean-up using a selected type of organization.

   a. An example of Line and Staff would be having a head for each area and assignments under each.

   b. If a committee were used, the results could also be evaluated easily.

2. Organize class for a mass production situation.
    a. Select a specific type of organization
    b. Appoint or elect personnel for each position.

IV. RESOURCES:

A. **Books:**

1. Amrine, H. T. and J. A. Ritchey and O. S. Hulley, *Manufacturing Organization and Management*, 2nd edition. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966.
2. George, Claude S., *Management in Industry*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964.
3. Owen, W. V. and Finsten, Howard V., *Industrial Relations*. New York: Appleton-Century-Crofts, 1964.

B. **Periodicals:**

1. DuPont, "The Organization and the Individual"
2. N.A.M., "Industry: Organization and Employees"

AREA: **Engineering**

CATEGORY: **Product Engineering**

CONCEPTUAL STATEMENT: **Engineers must design products that will meet the needs of the consumer in terms of quality, price, and function.**

I. SUB CONCEPTS

- **A. A competitive compromise between cost and quality is the goal of product design.**
- **B. When engineering standards are established, unnecessary duplication is minimized.**
- **C. Before a product can be manufactured, it must be designed for efficiency and tested for satisfactory performance and endurance so that it will function well and meet the required standards.**
- **D. A product must be designed to make use of the most efficient methods of manufacturing, which will allow for maximum profit.**

II. LESSON TOPICS

- **A. Product design**
- **B. Standards, tolerances and specifications**
- **C. Product testing**

III. ACTIVITIES:

A. Have the students select or produce a product on which several tests can be run to determine its ability to withstand the treatment it may receive in service.

B. Prior to project construction have students justify the materials to be used on the basis of function.

C. Divide the class into two groups. Present them with a product they are to build. Have one group thoroughly plan the product before production. The other group will begin production without prior planning.

D. Have the students set specifications, standards and tolerances to be followed in the designing process of a project, then complete detailed drawings.

IV. RESOURCES:

A. Books

1. Amrine and others, *Manufacturing Organization and Management*.
2. Earl, Arthur W., *Experiments with Materials and Products of Industry*.
3. Karger, Delmar W., *The New Product*.
4. Starr, Martin, *Product Design and Decision Theory*.
5. Van Doren, Harold, *Industrial Design*.

B. Periodicals

C. Films

D. Others

1. Examples
2. Visuals
3. Speakers

I. EXPANSION OF SUB CONCEPTS:

A. A competitive compromise between cost and quality is the goal of product design.

1. Minimum standards and maximum tolerances are used to keep costs at a minimum.

2. Cost reduction is a necessity for maximum profits and efficiency.

3. Quality must be kept at a competitive level.

4. Safety standards must be maintained.

B. Before a product can be manufactured it must be designed for efficiency and tested for satisfactory performance and endurance so that it will serve its function well and meet any required standards.

1. Cost is important, so that the product can be sold at a minimum price.

2. The function must be considered when designing and testing so that the product will stand up under actual conditions.

C. A product must be designed to make use of the most efficient methods of manufacture.

1. The engineer should be aware of the possible methods of manufacture for each part so that the product can be designed to use the most efficient and economical method.

2. The engineer must be aware of the characteristics of selected materials. In this way he can choose the material that will do the best job.

3. Design must also attempt to make the most efficient use of the selected materials, e.g. achieving minimum waste.

D. When engineering standards are established, unnecessary duplication is minimized.

1. Standards save the engineer's time.

2. Many standards have been adopted on an industry-wide basis.

3. Numerous companies have adopted the standards of larger companies.

GM standards, for example, are widely used.

II. LESSON TOPICS:

A. Title: Product Design

1. Concepts:

A competitive compromise between cost and quality must be reached. Products must be designed to make use of the most efficient methods of production.

2. Introduction:

This topic could be appropriate immediately before a class begins to design a project. It may be introduced with a discussion of products of good design and some of bad design.

When beginning a project, have the students set functional requirements that the project must meet.

3. Presentation:

a. What is product design and what is the job of the product designer?

b. Elements to consider when designing a product.

(1) Actual use of the product.
(2) Most efficient machines and methods available.
(3) Choosing the best material.
  a. Cost
  b. Characteristics
  c. Substitutes

4. Evaluation:

Evaluate students on their projects on the basis of how they meet the needs stated as functional requirements.

5. References:

Alger and Hayes, Creative Synthesis in Design. pp. 1 - 5, 11 - 16.

Amrine, Ritchey and Hulley, Manufacturing Organization and Management. pp. 36 - 37.

Starr, Martin, Product Design and Decision. Chap. 1 - 2.

B. Title: Standards, Tolerances, and Specifications

1. Concepts:

Standards, tolerances, and specifications must be set so that the quality of the product will be high enough to meet the needs and the requirements of the consumer.

2. Introduction:

This topic would be appropriate for introducing the need for detailed drawing. The class should be required to make a detailed drawing of their projects or mass production product before it is built. This topic could also be used in a drafting class.

3. Presentation:

a. What are standards, tolerances, and specifications?

  (1) Definitions
  (2) Examples of each

b. Why are standards, tolerances, and specifications important?

  (1) Make sure that the product is of the desired quality.
  (2) Facilitate the construction of the product.
  (3) Specifications are needed for the purchasing department to be able to obtain the materials.
  (4) Safety factor
  (5) Allow cost estimating

c. How and where are standards, tolerances, and specifications used?

4. Evaluation:

To evaluate the student, have him make detailed drawing of his project and evaluate the drawing for proper use of standards, tolerances, and specifications.

5. References:

Bethel, Atwater, Smith, and Stackman, Industrial Organization and Management, 1962.

C. Title: Product Testing

1. Concepts:

Before a product can go into production it must be tested to determine whether or not it meets specifications. Product testing often demonstrates the need for engineering changes.

2. Introduction:

This topic would be appropriate at the time that students complete their first project. It could be effective in evaluating the prototype produced as part of a mass production unit.

It will be most effective if supplemented by a demonstration of some testing procedures.

3. Presentation:

a. Why must products be tested?

b. Goals of testing:

(1) To determine whether the materials selected for a product are suitable.
(2) To predict the behavior of a design while in service.

c. Examples of testable factors.

(1) Resistance to wear
(2) Resistance to corrosion
(3) Hardness
(4) Strength
(5) Elasticity
(6) Machinability
(7) Formability
(8) Weldability

4. Evaluation:

a. Review and evaluate the results of student tests on their projects.

b. Evaluate the changes which students suggest following the testing of their projects.

5. References:

Amrine, Ritchey, and Hulley, Manufacturing Organization and Management. pp. 436 - 439.

Niebel and Baldwin, Designing for Production. pp. 97 - 98.

III. ACTIVITIES:

A. Perform several tests on the product.

1. This product may be built by the class in order to test a mass production project before putting it into final production.

2. Perform an endurance test to determine whether the product will stand up under actual conditions.

3. Conduct a performance test to determine whether the product will perform well.

4. Have the students make a chart of the test results.

B. Have the students design a project and choose the materials they would like to use for its construction.

1. A set of requirements could be set forth and the students asked to try to find materials to meet these requirements.

2. Have the students find the most economical material that will meet the functional requirements.

3. Give the students a specific material and ask them to design a product that will only utilize this material. They may also be asked to use every bit of the material that was given to them.

4. Ask the students to find a material that will do the job with a minor alteration.

C. Divide the class into two groups. One group can completely plan a short, simple project with drawing and specifications. The second group does without planning.

1. The class can compare, written or orally, the end product in terms of quality, performance, endurance, cost and any other pertinent information.

2. The students can have a discussion on the possible ways of re-designing.

3. This activity can be combined with activity "A", thus testing and comparing the two products.

D. The students can design and make detailed drawings with standards, tolerances, and specifications.

1. Have the product designed to meet a specific need of the consumer.

2. Have the students set standards and tolerances so that the product will perform its function well.

3. If there are sub-assemblies or components, have the students decide which ones they will produce and which they will purchase.

IV. **RESOURCES:**

A. **Books:**

1. Alger and Hays, Creative Synthesis in Design. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964.

2. Amrine, Ritchey, and Hulley, Manufacturing Organization and Management. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966, 2nd edition.

3. Asmon, Morris, Introduction to Design. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1962.

4. Bethel, Atwater, Smith and Stockman, Industrial Organization and Management. New York: McGraw-Hill Book Co., 1962, 4th edition.

5. Earl, Arthur W., Experiments with Materials and Products of Industry. Bloomington, Illinois: McKnight & McKnight Publishing Co., 1960.

6. Karger, Delmar, The New Product. New York: The Industrial Press, 1960.

7. Niebel and Baldwin, Designing for Production. Richard D. Irwin, Inc., 1963, revised edition.

8. Starr, Martin Kenneth, Product Design and Design Theory. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963.

9. Van Doran, Harold, Industrial Design. New York: McGraw-Hill Book Co., 1954, 2nd edition.

B. **Films:**

1. "Technological Development", University of Indiana Film Library, Bloomington, Indiana, 30 minutes, b&w.

AREA: **Production**

CATEGORY: **Quality Control**

CONCEPTUAL STATEMENT: **Quality control is a non-productive part of the production sequence whose function it is to insure a uniform standard of quality among items produced.**

I. SUB CONCEPTS

A. Quality control is non-productive and will add to the cost of the finished product.

B. It is not a function of quality control to impart quality to a product. Rather, it monitors quality as produced elsewhere.

C. Tolerances and allowances influence scrap levels, production levels, final cost, and serviceability.

D. When properly implemented, quality control will realize greater profits for the company.

E. The key to quality control is the sampling technique used.

F. Some friction may exist between quality control and production personnel.

II. LESSON TOPICS

A. Sampling and statistics

B. Craftsmanship

C. Inspection devices

D. Precision

(1) Tolerances and allowances
(2) Classes of fits

III. ACTIVITIES

A. Statistical sampling using black and white marbles.

B. Have students make gauging fixtures.

C. Precision: have students make an object "exactly" 6 inches long.

D. Have students rank their projects in order of workmanship.

E. Have students submit their projects to a quality control center.

F. Have students make a round object by hand and by machine.

IV. RESOURCES

A. Books

1. Brown, The Social Psychology of Industry.
2. Eilon, Elements of Production Planning and Control.
3. Giachino & Beukema, Drafting and Graphics.
4. IBM, Precision Measurement in the Metal Working Industry.
5. Mac Niece, Production Forecasting, Planning and Control.
6. McCarthy, Sampling - Elementary Principles.
7. Reinfeld, Production Control.
8. Rusinoff, Manufacturing Processes.

B. Films

1. "Quality Control by Statistical Methods" (2 films)
2. "Follow It All the Way"
3. "Quality Control: (Industrial Organization and Management)"

I. **EXPANSION OF SUB CONCEPTS:**

A. Quality control is non-productive and will add to the cost of the finished product.

   1. Quality control uses labor, facilities, and time which could be used elsewhere or else saved.

   2. Quality control is one of several indirect costs.

   3. Quality control contributes nothing to the rate of production.

B. It is not a function of quality control to impart quality to a product. Rather, it monitors quality as produced elsewhere.

   1. While not changing the product, it acts to insure that standards are maintained.

   2. Quality control could be viewed as a policing function.

   3. Quality control adds no magic ingredient called "quality". Quality comes from specifications and workmanship.

C. Tolerances and allowances influence scrap levels, production levels, final cost, and serviceability.

   1. Limits of acceptability are factors which determine which items are "okay" and which are rejected.

   2. The more items rejected, the slower the production rate.

   3. By simply changing the standards, production could go down and scrap up, or vice versa.

   4. High standards add to final cost by increasing labor and production time.

   5. High standards add to wear characteristics of the final item, smoothness of operation, rate of maintenance, and expected lifetime of the final product.

D. When properly implemented, quality control will realize greater profits for the company.

   1. Quality control contributes to customer appeal and satisfaction. This, in turn, increases sales.

E. The key to quality control is the sampling technique used.

1. Formal, mathematical, statistical methods are used to determine how extensive a sample should be taken.

2. Because a single sample may represent a huge lot, the sampling technique is of critical importance.

3. Sampling minimizes inspection time.

F. There may exist some friction between quality control and production personnel.

1. The interests of the quality control group and the production group may conflict -- especially when production workers are on an incentive pay scale.

2. Rapid and accurate communications -- feedback -- between quality control and production is essential to understanding and smooth operation.

II. LESSON TOPICS:

A. Title: Factors Considered in Selecting a Form of Ownership

1. Concepts:

Based on laws of mathematical probability, sampling procedures allow industry to achieve the maximum control of quality from inspection. Statistical analysis makes it possible for industry to know what is and will be necessary to achieve that effect.

2. Introduction:

Statistics and sampling will be a rather abstract topic in high school but with illustration from resource books, an experiment, the math department, or a guest speaker, the significance of the topic can be brought out -- probably in a production type of program.

3. Presentation:

a. Predictable probability -- constant cause system.

   (1) Varying results will fall within a constant range.
   (2) Nothing is constant, but the range and frequency of variation is constant.
   (3) Shewhart Bowl.

b. The language of statistics.

   (1) Terms, symbols.
   (2) Distribution curves, control charts.
   (3) Formulae

c. Applications.

   (1) Sampling.
   (2) Defects, fraction defective.

4. Evaluation:

Review results from sampling experiment. Have students submit reports. Check over assigned math-type outside assignments on probability.

5. References:

Grant, E. L., Statistical Quality Control. New York: McGraw-Hill Book Co., 1952, $7.75.

McCarthy, Philip J., Sampling-Elementary Principles. New York School of Industrial and Labor Relations Bulletin No. 15, Cornell University, Ithaca, N.Y., 1965, 31 pp.

B. Title: Craftsmanship

1. **Concepts:**

Craftsmanship versus mass production: today, quality control is an attempt to insure good quality in a situation where the worker is on an incentive pay scale, never sees the buyer, feels no personal responsibility toward the customer, and industry is largely impersonal in nature.

2. **Introduction:**

Craftsmanship is a topic to be emphasized throughout the year. There is little specific information which can be imparted to the students on the topic. Rather, an appreciation of craftsmanship must be developed.

3. **Presentation:**

   a. History of craftsmanship - origin of the word.

      (1) Gild system; apprentices and journeymen
      (2) Craft unions a semi-attempt to do the same thing to this country.
      (3) Industrial revolution heralded downfall of gilds -- machines made uniform products and cheaper products.
      (4) As industry became larger and assembly line techniques more prevalent, industry became more impersonal.
      (5) Quantity production techniques were emphasized -- incentive pay, etc.
      (6) Hence, quality suffered.
      (7) Quality control attempts to re-establish quality in mass produced goods.

4. **Evaluation:**

   a. A self-evaluation by the student of his projects is suggested; part of this self-evaluation should be in the area of craftsmanship.

   b. Impromtu evaluation of craftsmanship. Example: pull an expensive jackknife from your pocket and pass it around. Have the students try to estimate the cost. Compare to similar items. Point out features denoting quality.

5. **References:**

Brown, J. A. C., The Social Psychology of Industry. Baltimore, Maryland: Penguin Books, 1965, pp. 207-8.

Gross, Charles, The Gild Merchant. Oxford University Press, London, 1927, 1927, 2 Vols.

C. **Title:** Inspection Devices

1. **Concepts:**

   Much of modern industry deals with products whose dimensions are expressed in terms of .001 or less and certain types of precision instruments have been developed and adopted to measure linear dimensions to such a degree of accuracy.

2. **Introduction:**

   In every lab operation some sort of precision instrument will be touched on -- probably the micrometer or vernier caliper. From this point on the wide range of measuring instruments that industry uses should at least be mentioned. This topic is well worth while in any program because the idea of precision will be present. It is not expected that many of the public schools will have some of the more sophisticated instruments so the topic should receive enrichment from motion pictures or field trips.

3. **Presentation:**

   a. History of linear measurement.

      (1) Early standards
      (2) Present standards

   b. Fixed gauges.

      (1) Plug gauges, snap gauges
      (2) Ring gauges, radius gauges
      (3) Accuracy possible

   c. Micrometers and verniers

      (1) How to read
      (2) Accuracy possible
      (3) Applications of vernier

   d. Compression measurement.

   e. Precision gauge blocks.

   f. Surface plates and accessories.

4. **Evaluation:**

   a. Observation of use of micrometers, verniers, and other available instruments.

   b. Examination of simple gauging fixture problem.

   c. Review of inspection cards from quality control center activity.

5. References:

IBM, Education Department, Precision Measurement in the Metal Working Industry. Syracuse, New York: Syracuse University Press, 1952.

Rusinoff, S. E., Manufacturing Processes. Chicago, Illinois: American Technical Society, 1962, Chap. 21.

D. **Title:** Precision

1. **Concepts:**

Precision is a matter of degree and is a relative thing. Manufactured items are made to minimum possible tolerances while remaining functional. Costs are directly related to precision.

2. **Introduction:**

The concept of precision in the high school can best be studied in a unit on tolerances, allowances, fits, etc. The emphasis placed on this subject will depend -- or should depend -- on the nature of local industry and the applicability of the subject in the community.

3. **Presentation:**

   a. Study of tolerances, allowances, clearances, and fits.

   b. Drafting techniques; how each type of fit is designated, how found in charts.

   c. Interchangeability of parts.

   d. Precision as applied to machines; machine capability -- hand techniques, lathe, mill, grinders, etc.

   e. Increasing precision with increasing sophistication of machines.

4. **Evaluation:**

   a. Check student's work to see it is within specifications called for.

   b. Have students check each other's work.

   c. On plans, specify a "Class 2" fit rather than giving a decimal tolerance, forcing students to find out what it is that is called for.

5. **References:**

French, T. E. and Sevensen, C. L., Mechanical Drawing. New York: McGraw-Hill Book Co., 1957, Chap. 10.

Giachino, J. W. and Beukema, H. J., Drafting and Graphics. Chicago, Illinois: American Technical Society, 1961, Chap. 7.

III. ACTIVITIES:

A. Statistical sampling using black and white marbles.

   1. Using a bowl with a quantity of black and white marbles in it, have the students estimate the per cent white and the per cent black by experimenting with different sampling techniques.

   2. A similar experiment is the Shewhart Bowl, using different colored, numbered poker chips.

B. Have students make gauging fixtures.

   1. Have the student make such a fixture with locating pins, spots for plug gauges, etc. This might be in conjunction with a production problem.

   2. A fixture, as opposed to a simple gauge, checks for more than one dimension at a time.

C. Have the students make an object "exactly" 6 inches long.

   1. First have them make it to yardstick accuracy, then to rule, then to machinest's 1/64 scale, then to 1/1000 mic, etc.

   2. This will show that precision is a relative thing -- relative to the instrument used to measure it and relative to its use.

D. Have the students rank their projects by order of workmanship.

   1. After an exercise is completed and each student has an item he has made identical to others in the class, have each student arrange the items according to quality and workmanship.

   2. This should be done privately, and should be based on dimensional accuracy and not just looks.

   3. Compare the results with the class.

E. Have the students submit their projects to a quality control center.

   1. Cards would be filled out by fellow students rating the student's work and explaining why the rating was given.

   2. After a percentage of the class have rated the work, the student should have a chance to improve his job.

   3. This would be similar to the interchange of information between a quality control section and a production group.

F. Have students make a round object by hand and by machine.

1. Have the students file or forge an object "round".
2. Then make the same piece freehand on a grinder or belt sander.
3. Finally, have him turn it on the lathe using a form tool.
4. Compare results with a varisty of measuring devices.

IV. RESOURCES:

A. Books:

1. Brown, J. A. C., *The Social Psychology of Industry*. Baltimore, Maryland: Penguin Books, 1965, p. 107-8.
2. Eilon, Samuel, *Elements of Production Planning and Control*. New York: The Macmillan Company, 1962, Chap. 19.
3. French, T. E. and Svensen, C. L., *Mechanical Drawing*. New York: McGraw Hill Book Co., 1957, Chap. 7, 10.
4. Giachino, J. W. and Beukema, H. J., *Drafting and Graphics*. *Chicago, Illinois: American Technical Society, 1961, Chap. 7.*
5. Grant, E. L., *Statistical Quality Control*. New York: McGraw-Hill Book Co., 1952, $7.75.
6. Gross, Charles, *The Gild Merchant*. London: Oxford University Press, 1927, 2 Vols.
7. IBM, Education Department, Precision Measurement in the Metal Working Industry. Syracuse, New York: Syracuse University Press, 1952.
8. Reinfeld, Nylves V., *Production Control*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1959, pp. 186-194.
9. Rusinoff, S. E., *Marketing Processes*. Chicago, Illinois: American Technical Society, 1962, Chapter 21.

B. Motion Pictures:

1. "Quality Control: (Industrial Organization and Management)", produced by McGraw-Hill Book Co., 10 min., $2.25. Available from Pennsylvania State Library, Audio-Visual Aids Library, University Park, Pennsylvania.
2. "Quality Control by Statistical Method: Acceptance Sampling", 17 min., $2.65 and "Quality Control by Statistical Methods: Process Control", 17 min., $1.65, produced by United World. Available from Visual Aids Service, University of Illinois, Champaign, Illinois.

3. "Follow it All the Way", 1962, 27 min.; free; how quality control is maintained throughout production. Available from Association Films, Inc., 324 Delaware Avenue, Oakmont, Pennsylvania 15139.

AREA: **Labor**

CATEGORY: **Union Organization and Function**

CONCEPTUAL STATEMENT: When employees feel that their employer is taking undue advantage of their services, they will organize to curtail any possible mistreatment.

I. SUB CONCEPTS

A. By organizing, workers can maintain strength in voicing their needs.

B. By offering more than unions are presently delivering in similar industries, a host industry can maintain a non-union shop.

C. Unions serve as a communications link between workers and management.

D. The demands of a union will depend on what types of membership are represented.

II. LESSON TOPICS

A. History of Unions

B. Organizations of the local

C. Present Day Problems Facing Unions

III. ACTIVITIES

A. Utilize basic union structure in a mass production unit.

B. Have a union representative speak to the class about his union.

C. Have the students make a survey of union activity in the community.

D. Have the students read labor publications and make reports to the class on a regular basis.

IV. RESOURCES

A. Books

1. Amrine and others, Manufacturing Organization and Management.
2. How to Run a Union Meeting.
3. Miernyk, William H., Trade Unions in the Age of Affluence.

B. Periodicals

1. The American Federationist AFL-CIO.

C. Films

1. "With These Hands"

D. Others

1. Various publications obtainable from the AFL-CIO.
2. Organization chart of AFL-CIO structure.
3. Union representative.

I. EXPANSION OF SUB CONCEPTS:

- A. By organising, workers can maintain strength in voicing their needs.
  - 1. By grouping together, workers can control production.
  - 2. Unfair practices by management can be effectively controlled.
  - 3. Organization forces management to deal with members individually on a personal basis.
  - 4. Job security is maintained through the organization.
- B. By offering more than unions are presently delivering in similar industries, a host industry can maintain a non-union shop.
  - 1. By offering more than the union can, companies can maintain a non-union shop.
  - 2. People who are not union members in an open shop benefit from the union movement.
  - 3. Unions exert pressures which tend to upgrade the economy.
- C. Unions serve as a communications link between the workers and management.
  - 1. Collective bargaining assists both union and management in matters of remmeration to workers.
  - 2. Grievance procedures set guidelines to insure workers of their rights within the plant.
  - 3. Safety committees inform both labor and management of hazards and safety needs.
  - 4. Wage committees assist management in the establishment of equitable remmeration for the workers' efforts.
  - 5. Training programs continually keep the labor force current in maintaining the necessary skills.
- C. The demands of a union will depend on what types of membership are represented.
  - 1. Industrial unions will attempt to procure a large membership of non-skilled or semi-skilled workers (generally).
  - 2. Craft unions tend to move for higher wages for a limited number of highly skilled workers.
  - 3. The age of the members may play an important part in the demands to be made by the union. For example, old workers - retirement plans, young workers - higher wages.

II. LESSON TOPICS:

A. Title: The History of Unions

1. **Concepts:**

Unions developed out of a need for protection of the employees from exploitation on the part of employers.

2. **Introduction:**

This topic would be appropriate at the beginning of the unit on labor. In order for the student to understand unions today he needs to know why they were originally formed.

It would be more meaningful if this topic was supplemented with a film such as "With These Hands", as well as with charts.

3. **Presentation:**

a. Why do unions exist?

(1) Low wages
(2) Poor working conditions

b. The union movement

(1) Craft Guilds
(2) Early attempts
(3) Knights of Labor
(4) AFL
(5) CIO
(6) Their merger
(7) National organization of the AFL-CIO

4. **Evaluation:**

a. Essay-test outlining the reasons that unions came into existence.

b. Have the students give reports to the class on one particular phase of union history that interests them.

5. **References:**

Amrine, Ritchey, and Hulley, Manufacturing Organization and Management. pp. 369 - 374.

Miernyk, William H., Trade Unions in the Age of Affluence. pp. 17 - 51.

B. **Title:** The Organization of Locals

1. **Concepts:**

Union locals serve as the representatives of the individual members.

2. **Introduction:**

This topic would serve as a follow-up lesson to the topic on the history of unions.

Supplemental material should include an outside speaker who can outline the duties of the local union in the community.

3. **Presentation:**

a. Why are unions organized?

(1) Workers want higher wages
(2) Better working conditions
(3) More benefits
(4) Job security

b. How are unions organized?

(1) Workers must show an interest.
(2) An international union representative is contacted.
(3) A vote is taken by the union in the plant.
(4) An election campaign is held.
(5) A second vote is held under the auspices of the National Labor Relations Board.
(6) If the results are favorable, management is notified and collective bargaining starts as soon as officials are elected.

4. **Evaluation:**

a. Review and evaluation of a short essay test on the need or duties of the local.

b. Review and evaluation of a role-playing activity where the students go through the formal procedure of forming a local.

5. **References:**

Amrine, Ritchey, and Hulley, Manufacturing Organization and Management. pp. 327 - 400.

How to Run a Union Meeting, AFL-CIO Education Dept.

C. Title: Problems of Unions

1. **Concepts:**

There are problems which the unions must face in order to serve their membership effectively.

2. **Introduction:**

This topic will act as a culmination of the area of organization.

A speaker from a local union, probably the business agent, should be asked in to explain some of the problems which the union feels are most important.

3. **Presentation:**

A. What are some problems facing unions presently?

(1) Organization of white collar workers.
(2) Conflict of interest between younger and older workers.
(3) a. Younger workers want immediate pay raises, more extensive medical coverage and vacations.
    b. Older workers want more extensive retirement benefits, hospitalization and job security.
(4) Differences of opinion as to the role unions are to play in society.
    a. Some members advocate the support of political parties and causes.
    b. Others do not.
(5) Government regulation
    a. Taft-Hartley
    b. Landrin-Griffin

4. **Evaluation:**

Have students question their parents or some union members in their neighborhood with regard to problems of unions. Then they will write a short paragraph outlining the reasons that they think underlie these problems.

5. **References:**

Amrine, Ritchey, and Hulley, Manufacturing Organization and Management. pp. 384 - 385.

III. ACTIVITIES

A. Utilize basic union structure in a mass production unit or in the shop clean-up.

1. The teacher acts as the management of a plant and makes demands on the students which are unfair, such as keeping them late for other classes, and unfair testing.

2. The teacher suggests how the students can solve the problem, referring to how workers in industry solve such problems.

3. The students could set up their own union and the teacher could bargain with them.

4. Students could also use the union organization in the clean-up procedures that are in use in many shops. This could be used on an unfair foreman or on workers who are loafing on their clean-up jobs.

B. Have a local union representative speak on his union.

1. How a plant is organized.

2. Growth and development of the local.

3. Community functions and activities of the union.

4. The need for the union and how it started.

5. The need for membership support.

C. Have the students make a survey of the local area to determine:

1. Which unions prevail in their area.

2. General activities of the unions

   a. Public services

   b. Community functions

3. General attitude of the community towards unions - This could be done with a questionnaire which would include the person's occupation, etc. The students could fill out the same form and a comparison could be made to see if they differ and the reasons behind this.

D. Have the students read labor publications and make reports to the rest of the class.

1. Modern trends and issues facing unions today.

   a. Labor laws

   b. Organizing white collar workers

2. Training programs on a national and local level. This could be very interesting on a local level because some of the students might be interested in such training programs upon completion of high school.

3. Case studies of collective bargaining, etc.

IV. RESOURCES:

A. **Books:**

1. Amrine, Ritchey, and Hulley, Manufacturing Organisation and Management. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966, 2nd edition.

2. Miernyk, William H., Trade Unions in the Age of Affluence. University of Colorado, 1964, 2nd printing.

B. **Periodicals:**

1. The American Federationist, AFL-CIO, 815 16th Street, N.W., Washington, D.C., 20006.

C. **Films:**

1. "With These Hands", University of Indiana, AFL-CIO Education Department, 815 16th Street, N.W., Washington, D.C., 20006.

D. **Others:**

1. Publications

   a. How to Run a Union Meeting, AFL-CIO Pub. #31, single copy free, 20¢ per additional copy, $15.00 per 100.

   b. Why Unions? AFL-CIO Pub. #41, 1962.

   c. This is the AFL-CIO, Pub. #20, 1964.

2. Speakers

   a. Local business representative

   b. Local union president

AREA: Financial Control

CATEGORY: Purchasing

CONCEPTUAL STATEMENT: A corporation maintains purchasing when it secures, at minimum costs, the quantity and quality of materials, supplies, services, and equipment needed to operate the company.

I. SUB CONCEPTS

A. Proper purchasing increases profits and enables the company to operate more efficiently.

B. Competitive bidding increases the company's ability to obtain lower prices and higher control of material quantity and quality.

C. The purchasing department acts as a control over the use of the company's funds for the attainment of production materials, capital expenditures, supplies, and services.

II. LESSON TOPICS

A. Function of Purchasing

B. Competitive Bidding for Purchased Parts

III. ACTIVITIES

A. Show how a purchase order is originated and trace its travels through the steps for approval and actual purchase by means of a flow chart.

B. Determine the material that you would need for building of a project, then go around to different vendors and determine who would give you the better price for the bill of materials.

C. Have the students observe and report on the manner in which their mother purchases the week's groceries.

IV. RESOURCES

A. Books

1. Folts, *Introduction to Industrial Management*.
2. Amrine and others, *Manufacturing Organization and Management*.

B. Others

1. Direct Field Study Manual
2. Visual Aids
    - a. Flow Chart

I. **EXPANSION OF SUB CONCEPTS:**

A. Proper purchasing increases profits and enables the company to operate more efficiently.

  1. Purchasing in large quantities from direct sources reduces the cost of materials and shipping charges.

  2. Quantity purchases, when market prices are low, reduces the cost of the materials.

  3. Maintaining adequate supplies of raw materials reduces the possibility of work stoppage or production slowdown.

  4. Excess purchasing of raw materials will increase storage costs.

B. Competitive bidding for vendor parts allows the company to obtain lower prices and control the material quantity and quality.

  1. Industries will purchase materials that meet their specifications from the supplier whose costs are the lowest.

  2. Industries purchase materials from a wide variety of vendors so that competition is keen among the vendors and their prices are maintained.

  3. Purchasing materials from a wide variety of vendors insures an adequate supply.

C. The purchasing department acts as a control over the use of the company's capital for the attainment of production materials, capital expenditures, supplies and services.

  1. The purchasing department does not decide what is to be bought, but buys for another department who sets the specifications for the required item.

  2. The purchasing department determines which of the vendors will supply the needed materials.

  3. The purchasing department can inform the various other departments of the funds that are currently available to them for major expenditures.

II. LESSON TOPICS:

A. Title: Function of Purchasing

1. Concepts:

The purchasing department must know what to purchase, where to purchase, how to purchase, how much to purchase, and how much to pay.

2. Introduction:

This topic could be introduced in conjunction with other related lessons concerning American industry. Purchasing is a supporting function of industry and, therefore, should be taught as a supplementary or related lesson.

This topic would be beneficial to the students by correlating purchasing in industry with the purchasing of materials for the industrial arts lab.

3. Presentation:

a. Why is it important to have a purchasing department and what functions does it serve?

b. Functions of the purchasing department:

(1) Receives requisition orders as the need develops from different departments.
(2) Determines the validity of the need.
(3) Investigates the market for the various suppliers that can meet the company's specifications of the product involved.
(4) Requests bids from the vendors.
(5) Determines who the vendor will be.
(6) Issues the purchase orders.
(7) Bills the department requesting the material.
(8) Keeps an accurate and current account of the expenditures of each department within the company.

c. It is therefore advantageous to have a specific department that is responsible for, and aware of, all the sources that a company can use for its outside purchases.

4. Evaluation:

a. Evaluate the ability of the student to chart the flow of a purchase order.

b. Determine the student's ability to select a vendor who will fulfill all their needs in supplying them with materials for their project.

5. References:

Folts, *Introduction to Industrial Management*. pp. 223 - 214.

Amrine and others, *Manufacturing Organisation and Management*. pp. 234 - 251.

B. **Title:** Competitive Bidding for Purchased Parts

1. **Concepts:**

   Competitive bidding for purchased parts allows the company to obtain lower prices and control the material quantity and quality.

2. **Introduction:**

   This topic could be most effectively introduced into a mass production project.

   It would probably be most beneficial if the students were responsible for the receiving of bids from school suppliers for this mass produced item.

3. **Presentation:**

   a. Why is it important for various industries to have competitive bidding for purchased parts?

   b. Advantages of competitive bidding:

      (1) Allows the company to purchase from a variety of vendors, thus reducing the possibility of material shortage.
      (2) Allows the company to purchase materials at the lowest possible cost.
      (3) Maintains standards and services of the vendors through competition.
      (4) Diversifies capital of company to many vendors, thus benefiting other businesses.
      (5) Forces vendors to supply additional services, in an attempt to convince the company to purchase from them.

   c. Disadvantages of competitive bidding:

      (1) Time consuming.
      (2) Vendors may bid low and find later they cannot supply the material at that price.
      (3) As a result of the supplier's cutting costs and bidding low, the quality of the material purchased by the company may be reduced.
      (4) Creates a great deal of paperwork which requires additional employment, thus reducing profits of the company.

4. **Evaluation:**

   On the basis of an assigned mass produced item, a committee will be selected to receive bids on the material necessary to construct this mass produced item. This committee will be evaluated on their ability to obtain the lowest price on the materials needed and the procedure used to determine the supplier to be used.

5. **References:**

   a. Directed Field Study Manual

III. ACTIVITIES:

A. Show how a purchase order is originated and then trace its travels through the steps for approval and actual purchase by means of a flow chart.

1. In our mass production exercise, have the students determine what material and equipment will be required in their specific area.

2. Have the students in the management section determine whether or not the request is feasible, and if it is, what will be allocated to fulfill the order.

3. Have the students in the purchasing department process the purchase order.

B. Determine the material that you would need for the building of a project, then go around to the different vendors and determine who would give you the best price for the bill of materials.

1. Have the students in the purchasing group send out purchase orders to the various vendors, receive bids from the vendors, and make determinations as to which vendor will be used to supply the material or equipment.

C. Have the students observe, and report on, the manner in which their mothers purchase the week's groceries.

1. The report will include the following:

   a. How many stores were used?
   b. Were trading stamps received?
   c. Were discount coupons used?
   d. Were customer services offered, such as home delivery, credit, etc.?

2. Have the students in the class relate the methods of purchasing groceries to the methods used by industry in purchasing materials.

IV. RESOURCES:

A. Books:

1. Folts, F. E., Introduction to Industrial Management. McGraw-Hill Book Company, Inc., 1963, pp. 223 - 241.

2. Amrine, H. T., Ritchey, J. A. and Hulley, O. S., Manufacturing Organization and Management. Englewood Cliffs, N.J.; Prentice-Hall, Inc., 1966, pp. 234 - 251.

B. Others:

1. Directed Field Study Manual

AREA: Marketing

CATEGORY: Packaging

CONCEPTUAL STATEMENT: Packaging departments of a company are responsible for designing and providing adequate packaging for the product.

I. SUB CONCEPTS

A. An increase in aesthetics is emphasized in the development of new packaging.

II. LESSON TOPICS

A. Package design
   1. The need for packaging design.
   2. Ways by which packaging design increases sales.

III. ACTIVITIES

A. Design a package that will prove to be a knowledgeable experience from a selected item or a given product.

IV. RESOURCES

A. Books

1. Amrine and others, *Manufacturing Organization and Management*.
2. Henderson and others, *Industrial Organization and Management Fundaments*.

I. **EXPANSION OF SUB CONCEPTS:**

A. An increase in aesthetics is emphasized in the development of new packaging.

1. Good, well designed packaging results in helpful and a useful means of advertising.

2. Well designed packaging attracts and arouses interest which bring a consumer to see what the product is.

3. Packaging well designed may increase the sales of a product.

II. LESSON TOPICS:

A. Title: The Need for Packaging Design

1. **Concepts:**

Packaging plays a major role in method in which a consumer receives a product. An increase in aesthetics is continually being emphasized, to increase advertising, arousing interest and increase the sales of a product.

2. **Introduction:**

Many people feel that packaging is only a structually strong package that holds and protects the product. What many people fail to realize is that packaging has many other functions.

This topic can be used as a related lesson and can be presented at the end of the year. Assignments in product design can be used for experimentation, to give the student a project to finish the year with.

3. **Presentation:**

a. Package designing

(1) Need for a package design
  - a. Structually strong enough to hold and protect the product.
  - b. Tight enough to prevent spoiling (when necessary).
  - c. Have the shape, size and color most likely to apply and appeal through the eye.

(2) Way by which packaging design increases sales.
  - a. The package design must attract attention.
  - b. The package must tell the products story (informative labeling).
  - c. The package must build confidence.
  - d. The package must look clean and sanitary.
  - e. The package must be convenient to handle or carry.
  - f. The package must look like good value.
  - g. The package must look like a fast seller.
  - h. The package must deserve a preferred display.
  - i. The package must minimize clerk time.
  - j. The package must be convenient to stock and display,
  - k. The package must prevent spoilage during the selling period.
  - l. The package must resist soiling.

4. **Evaluation:**

   a. Evaluate how well a student designs a package by testing the package for breakage. Use a package design for holding an egg and see if the egg will break when the package is dropped. Evaluate design, structure of package and the package appearance.

   b. Have students write a report on the different type of packages and what advantages are of each.

5. **References:**

   Amrine, Ritchey, and Hulley, Manufacturing Organisation and Management. pp. 176 - 177.

   Henderson and Haas, Industrial Organisation and Management. pp. 48 - 49.

III. ACTIVITIES:

A. Design a package which will prove to be a knowledgeable experience for a selected product to be packaged.

1. Design a package that will protect an egg in the worst of conditions. The package will be neat in appearance and will withstand a sudden fall. Marks will be given upon test. Individual people will work on project.

2. Given some type of product, design a package to place one-half dozen items in the smallest package that will save storing space.

IV. RESOURCES:

A. Books:

1. Amrine, H. T.; Ritchey, J. A. and Hulley, O. S., Manufacturing Organization and Management, 2nd edition. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966.

2. Henderson, H. B. and Haas, Albert, Industrial Organization and Management Fundaments. Brighton, Englare: Machinery Publishing Company, Ltd., 1961.

AREA: Marketing

CATEGORY: Sales Distribution

CONCEPTUAL STATEMENT: When products are available for sale, two problems which any industry attempts to face are: to whom will the product be sold, and how will the product be transferred to this purchasing person?

I. SUB CONCEPTS

A. The company salesman is a direct representative of the company, and an important factor in the selling of the product.

B. When the company physically moves the product from the plant to the customer, there are several alternatives for distribution.

C. The type of market for the product can change the type of selling approach.

II. LESSON TOPICS

A. What is a salesman - his job, responsibility, and importance to the company?

B. How is the product distributed, and why was that avenue selected?

III. ACTIVITIES

A. Have the students sell the product of the manufacturing lab. or some product developed or chosen by the students.

B. Films relating to the distribution and selling methods and procedures.

C. An assembly of speakers to speak to the students, or a trip to one of the local warehouses or such.

IV. RESOURCES

A. Books

1. Amrine and others, *Manufacturing Organization and Management*.
2. Gilmer, B., *Industrial Psychology*.

B. Periodicals

1. *The Role of Marketing*. N.A.M.

C. Films

1. "The Story of Distributive Education"
2. "ECO Islander"

I. EXPANSION OF SUB CONCEPTS:

A. The company salesman is a direct representative of the company and an important factor in the selling of the product.

1. All of the prior planning and effort, along with the expense, is in the hands of the salesman. He must succeed.

2. Whatever the salesman says and/or does will reflect on the reputation of the company. This may affect sales.

3. A salesman must make spot decisions whether he is qualified to make that decision or not.

4. Cost analysis is very hard to estimate for the sales department. Too little can affect customer relations, too much will hurt the company.

5. Knowing a competitor's product thoroughly is as important as knowing one's own product.

B. When the company physically moves the product from the plant to the customer, there are several alternatives for distribution.

1. A company may have its own salesroom.

2. The company may sell the product directly to stores which in turn sell to consumers.

3. Selling by mail is another channel of distribution.

4. Consignment selling to independent salesman or to stores is another avenue.

5. Selling directly to a wholesaler as a distributor for large quantities.

6. Although often criticized, the middleman is a very important link in the chain of distribution.

C. The type of market for the product can change the type of selling approach.

1. If the product is being sold to another industry, the buyer is a professional in the buying area. The approach will be on a professional level, and usually in large quantities.

2. A larger profit is usually obtained from selling directly to the public consumer than from selling to a wholesaler or retailer.

3. The quantity purchased by the customer whether industrial or public, will affect the cost per unit, both buying and selling.

II. LESSON TOPICS:

A. Title: The Salesman

1. Concepts:

One of the most important people in the machinery of any company is the person who actually sells the product to any prospective buyer. The job and responsibility of this person is of great importance to the company.

2. Introduction:

This topic would be appropriate at or towards the end of any industrial arts course. It may also be used as a means of getting into the topic for discussion.

3. Presentation:

a. What kind of person must a salesman be?

(1) Easy to get along with.
(2) Can cope with any situation.
(3) Has good business judgement.
(4) Possesses all the virtues, honesty, dependability, etc.

b. What is the job of the average salesman?

(1) Sell the company's product.
(2) Give the customer what he needs and not necessarily wants.
(3) Must know the product and its advantages and disadvantages.

c. The salesman must make a favorable impression on the potential customer of the company's reputation and his ability.

d. The amount of money which the sales department receives is very hard to determine. Too little will limit the salesman's ability, and too much may hurt the company.

4. Evaluation:

a. Review and evaluate a classroom situation. Have the students role-play as salesman and customers.

b. Evaluate the reports done by the students on the role of the salesman and the company.

5. References:

Amrine, H. T. and others, Manufacturing Organization and Management. pp. 493 - 495, 505 - 507.

Gilmer, B., Industrial Psychology. pp. 392 - 400.

N.A.M., The Role of Marketing. pp. 10 - 12.

B. Title: How is the Product Distributed?

1. Concepts:

There are several ways in which an industry can move the product from the plant or place of manufacture to the customer.

2. Introduction:

This topic could be used before the marketing of the mass production problem is begun. This topic could open the area for discussion and investigation by the students.

3. Presentation:

a. A direct sales outlet by the company.

(1) Salesman in outlet.
(2) Inventory of goods.
(3) How many stores should the company have and still run in the black?

b. Sell to industries directly.

c. Sell to wholesaler.

d. Sell to retailer.

e. Sell on consignment.

f. The middleman is a very important link in the chain of industrial distribution.

(1) Customers deal with distributor and not take up the time of the company.
(2) No need to inventory, by the manufacturer, of very large amounts.
(3) Do the selling for the company.

4. Evaluation:

a. Evaluate written reports concerning the different types of distributors and their job in an industrial society.

b. Evaluate the students as they determine the type of distribution avenue for the manufacturing product.

5. References:

Amrine, H. T. and others, Manufacturing Organization and Management. pp. 493 - 495, 505 - 507.

Gilmer, B., Industrial Psychology. pp. 392 - 400.

N.A.M., The Role of Marketing. pp. 10 - 12.

III. ACTIVITIES:

A. Have the students sell the product in various ways.

1. Have the students sell the product in the school store; explain the function the school store plays.
2. Have the students contact local businesses and sell the product to the local merchants. Explain the function of the local merchant.
3. Have the students sell door to door in the neighborhood. Explain the different types of selling.
4. Have the students sell a product directly from the lab.

B. Films relating to distribution and selling methods and procedures.

1. Obtain a film relating a salesman's part in the total marketing structure.
2. Have the students determine WHY the middle man is such a necessary part of the Industrial Society.
3. Obtain other films relating to sales and/or distribution.

C. Assembly of speakers to speak to the students about their certain function in the sales or distribution channels.

1. Have a small store owner speak on what his operation does and how he can afford to compete with larger operations.
2. Have a salesman speak on his job and how it relates to the company and the customer.
3. Ask a wholesaler to speak on his operation and its relationship to manufacturer and consumer.
4. Have a class or several classes visit a local warehouse. This can be compared with the storage area and operation of the local grocer.

IV. RESOURCES:

A. Books:

1. Amrine, H. T., Ritchey, J. A. and Hulley, O. S., Manufacturing Organisation and Management, 2nd edition. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966.
2. Gilmer, D. vonHaller, Industrial Psychology. McGraw-Hill Book Co., 1961.

B. Periodicals:

1. Haws, Robert W., and Schaefer, Carl J., Manufacturing in the School Shop. Chicago, Ill: American Technical Society, 1966, 3rd printing.

C. Films:

1. "The Story of Distributive Education", 16mm, 21 minutes, free. AssociatedFilms, Incorporated.

2. "ECO Islander", 16mm, 20 minutes, free. John Wood Company.

APPENDIX J

RESOURCE PERSONNEL AND CONSULTANTS

RESOURCE PERSONNEL AND CONSULTANTS

The following named individuals served the research project as resource persons and consultants on various problems as the procedures and materials for the program were being developed.

The following individuals furnished detailed review and recommendations for the development and revision of the Student Workbook.

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The following individuals provided valuable assistance and guidance as consultants in the development of seminar resource outlines and other materials used in the development of the program.

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* Mr. Robert J. Carrol
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* These individuals made one or more presentations to the Directed Field Study seminars.

APPENDIX K

COOPERATING INDUSTRIES AND
COORDINATING PERSONNEL

The following companies have participated during the two year operation of this experimental program by accepting the assignment of one or more students during the period of operation of the program. Coordinating personnel listed have assumed the responsibility of scheduling of students' time and submitting evaluations of their work.

Company	**Coordinating Personnel**
Alcan Aluminum Corporation Oswego, New York	**Mr. Grant Morehouse**
Armstrong Cork Company Fulton, New York	**Mr. Paul Furlow Personnel Manager**
Bliss Steel Products Corporation East Syracuse, New York	**Mr. Robert H. Bliss, Jr. Vice President**
Bristol Laboratories Syracuse, New York	**Mr. W. W. Ebbert Manager of Personnel**
Carrier Corporation Syracuse, New York	**Mr. Stig Gleisner, Manager Employment Services**
Crouse-Hinds Company Syracuse, New York	**Mrs. Ellen W. VanDusen, Manager Communications & Personnel Development**
Crucible Steel Co. of America Syracuse, New York	**Mr. Pat Allen, Director Management Development**
R. E. Dietz and Company Syracuse, New York	**Mr. William Dillon Personnel Manager**
Estabrook Printing Company, Inc. Syracuse, New York	**Mr. John E. Estabrook Sales Manager**
Frazier and Jones Company Syracuse, New York	**Dave Walton Personnel Director**
General Electric Company Syracuse, New York	**Mr. Ralph E. Holzwarth Manager - Community Relations**
Lamson Corporation Syracuse, New York	**Mr. William Burgan Director Personnel**
Lipe-Rollway Corporation Syracuse, New York	**Mr. A. E. Pennock Employment**

Company	Coordinating Personnel
Mohawk Airlines Utica, New York	Mr. Louis Roberts Director of Training
New Process Gear Division East Syracuse, New York	Mr. Ronald Norton Director of Personnel
Niagara Mohawk Power Corporation Syracuse, New York	Mr. Marcy Bower Division of Employee Relations
Oberdorfer Foundries Syracuse, New York	Mr. Dennis Dwyer Personnel Manager
Wm. C. Pahl Construction Company Syracuse, New York	Mr. William C. Pahl President
Pass and Seymour Syracuse, New York	Mr. Fred Swingler Personnel Director
Prestolite Company Syracuse, New York	Mr. Joseph Phelps Director of Personnel
Rockwell Manufacturing Company Syracuse, New York	Mr. Earl Hurd Director of Industrial Relations
Rollway Bearing Company, Inc. Liverpool, New York	Mr. Earl P. Smith Director Industrial Relations
Sargent, Webster, Crenshaw & Folley Syracuse, New York	Mr. Edward Bruce Director of Production
Syracuse China Syracuse, New York	Mr. Leslie R. Berland Personnel Director
Syracuse Heat Treating Corporation Syracuse, New York	Mr. John G. MacAllister President
Syroco Div., Rexall Drug & Chemical Co. (Syracuse Ornamental Co.) (Syracuse, New York	Mr. Norbert J. Mott Personnel Supervisor
Ternstedt Division General Motors Corporation Syracuse, New York	Mr. Ellis C. Mandeville Personnel Director
Vega Industries, Inc. Syracuse, New York	Mr. Paul James Executive Vice President
Western Electric Company, Inc. Syracuse, New York	Mr. A. S. Anderson Manager